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Volume 22 NOVEMBER 1953 Number 11

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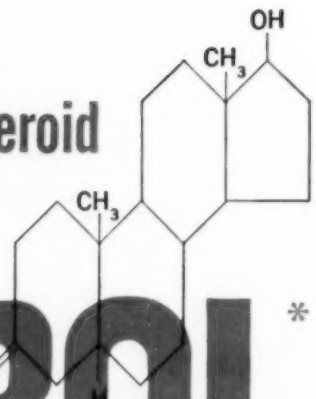

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RICHARD H. SIEDENBURG, M.D., assumed the duties of Plant Physician at the Baltimore Refinery, Esso Standard Oil Company, on September 21, 1953. DR. SIEDENBURG is a graduate of Valparaiso University in Indiana and St. Louis University Medical School. After an internship at Kings County Hospital, Brooklyn, he spent three years at the Mayo Clinic in Rochester, Minnesota. He joined Esso in 1948 as Assistant Plant Physician at the Bayway Refinery. In February, 1951, he was transferred to the Bayonne Refinery as Acting Plant Physician. DR. JOSEPH ECKER, who has been Plant Physician at the Baltimore Refinery on a temporary assignment, became Assistant Plant Physician at the Bayonne Refinery on September 21, 1953. DR. ECKER joined Esso in March, 1951. He is a graduate of the Medical School of the German University in Prague, Czechoslovakia. He interned at the Beth Israel Hospital in Passaic, New Jersey, and the Elizabeth General Hospital in Elizabeth, and for six years was the Resident and Senior Resident Physician at the New Jersey Sanitorium at Glen Gardner, New Jersey.

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H. G. GARDNER, M.D., East Chicago, Indiana.
FRANK G. OBER, M.D., Burlington, Iowa.
EDWARD SHOWALTER, M.D., Chicago.
RICHARD A. SUTTER, M.D., St. Louis, Mo.

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JOHN R. PAVIA, M.D., East Orange, New Jersey, has been appointed Medical Director of Public Service Electric and Gas Company and Public Service Coordinated Transport. DR. PAVIA has been affiliated with these organizations in medical work since 1937.

M. F. ARNOLD, M.D., of the Indiana Harbor Works of Inland Steel Company, has been appointed Assistant Director of the Harbor Works Medical Department. This appointment was effective August 12, 1953. DR. ARNOLD is a graduate of Indiana University School of Medicine, 1944, and was associated with the late DR. S. J. PETRONELLA, of East Chicago, Indiana, in industrial and general practice prior to joining the staff of the Inland Steel Medical Department on May 14, 1953.

HARRY SHAPIRO, M.D., has been appointed to the newly created post of Medical Director for Otis Elevator Company at its plant at Yonkers, New York. DR. SHAPIRO'S record of practice includes service as a naval flight surgeon during World War II, District Health Officer of the New York City Health Department, Industrial Hygiene Physician with the New York State Labor Department, as well as years of private practice. He is a member of A.M.A., and the Westchester County Medical Society, and has contributed numerous articles on industrial medicine and toxicology to medical journals.

NORMAN PLUMMER, M.D., Medical Director, New York Telephone Company, and Chairman of the New York Heart Association's Committee on Cardiovascular Diseases in Industry, is in charge of an all-day Conference, called "Heart in Industry," on the theme that persons with heart diseases can work. Sponsored by the New York Heart Association, the Conference will provide a platform for speakers and panels representing the thoughts of industrial management, labor, insurance companies, compensation boards and community agencies, as well as cardiologists, on the problems relating to the employment of cardiacs. Serving with DR. PLUMMER on the Conference Steering Committee are DRS. EDWARD P. MAYNARD, JR., IRV-

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ING S. WRIGHT, ANTHONY J. LANZA, WILSON G. SMILLIE, LEO PRICE, and JOHN W. FERREE. The Conference will take place at the Hotel Statler, New York City on November 20, 1953, with the morning session starting at 9:30, the luncheon at 12:15, and the afternoon session at 2:30. Speakers at the luncheon will be MAJOR GENERAL HOWARD MCC. SNYDER (RET.), Personal Physician to President Eisenhower, and WILLIAM WOOD PRINCE, well-known Chicago industrialist. The morning speakers will be DRS. S. C. FRANCO, LOUIS KATZ, LAURITZ S. YLVISAKER and HOWARD B. SPRAGUE. The afternoon meeting will feature an on-stage demonstration of a Work Classification Clinic, narrated by the National Broadcasting Company reporter, BEN GRAUER. The Conference will conclude with a panel with eight participants, on the subject, "Your Job and Your Heart."

Awards to Dr. Vonachen

HAROLD A. VONACHEN, M.D., Medical Director of Caterpillar Tractor Company, Peoria, Illinois, has received a Presidential Citation for Outstanding Service in promoting the employment of physically handicapped persons. The Award was made at a dinner sponsored by the Governor's Committee for Employment of the Physically Handicapped and the Disabled American Veterans at the LaSalle Hotel in Chicago on Tuesday, October 4, 1953. State Director of Labor, ROY F. CUMMINS, presented the Award on behalf of the President's Committee for Employment of the Physically Handicapped. The Citation honors DR. VONACHEN for his pioneering work in "Human

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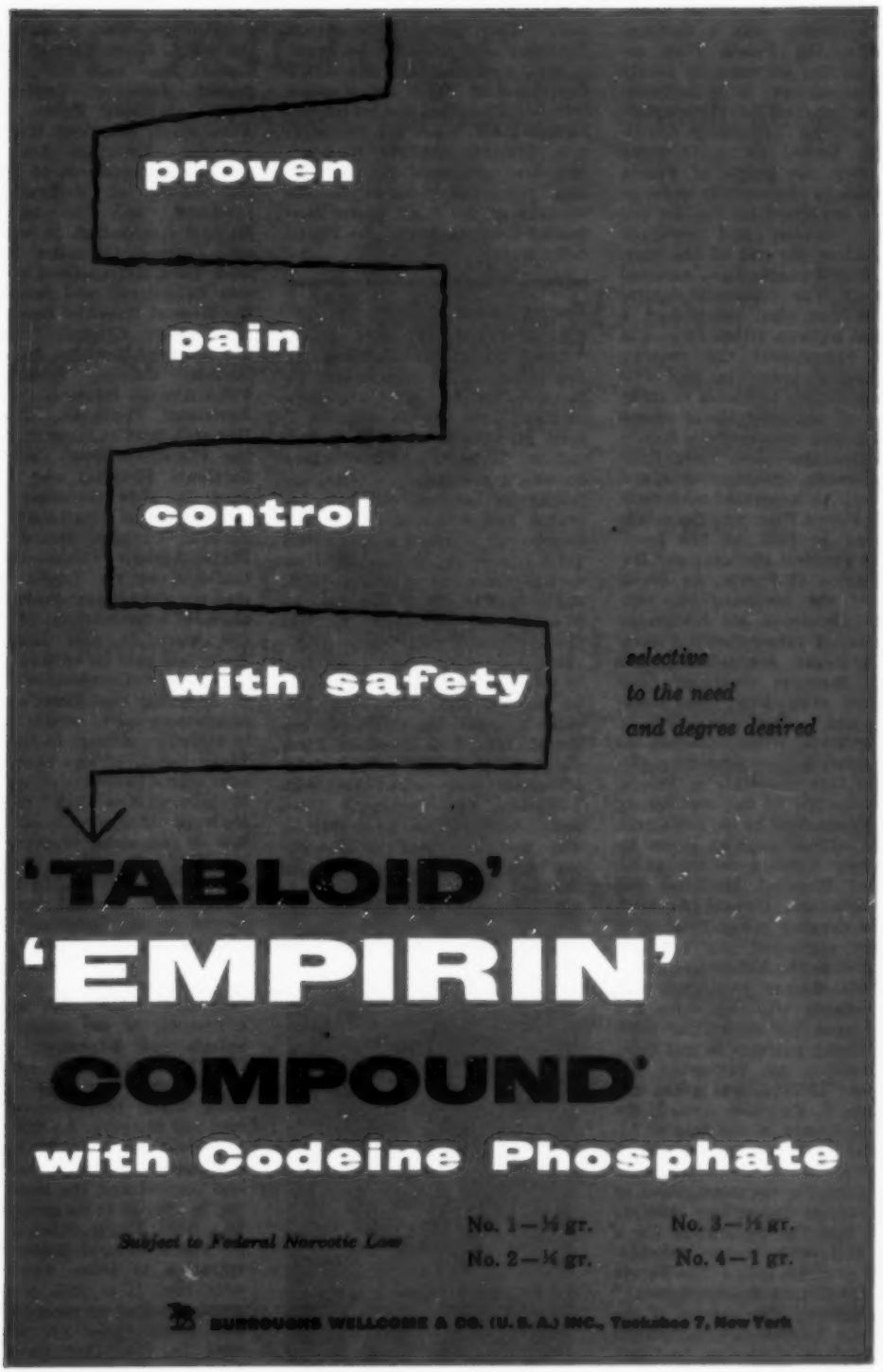
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Rehabilitation." First launched in 1942 at Peoria, Illinois, when the productive use of all available manpower was a national necessity, the Peoria Plan coordinated the activities of nearly 100 organizations in a community-wide program for the employment of the physically handicapped. Under DR. VONACHEN'S leadership, the people of Peoria continued to cooperate in developing job opportunities for the disabled, veterans and civilians alike, after the end of the war. Over 60,000 people have received guidance. The successful operation of this plan established a national pattern. Other cities and towns throughout the country sent medical, industrial, and civic representatives to Peoria to study means of applying the program to their own communities. Representatives also came from England, Canada, Czechoslovakia, and Belgium. An important outgrowth of the Peoria Plan was the establishment, in 1951, of the Institute of Physical Medicine and Rehabilitation of Peoria. As President of the Institute, DR. VONACHEN developed an integrated program of rehabilitation; nursing; physical, occupational, and speech therapy; vocational testing and counseling; job placement; and medical social service. The Institute, a non-sectarian organization, is now providing service at both hospitals in Peoria. Characteristic of the zeal among others generated by DR. VONACHEN is the selfless support given by volunteer workers to the Institute of Physical Medicine and Rehabilitation. Unpaid workers, women ranging in age from 16 to 60, are organized into a group identified as the Volunteers of the Institute. Most of them work with the patients although some are called upon for secretarial work and driving patients to and from the Institute. DR. VONACHEN, for the year 1943-44, was given the William S. Knudsen Award, the highest Award in the field of Industrial Medicine, for "outstanding work in the development of a program for the employment of handicapped Caterpillar workers which laid the foundation for a community-wide human rehabilitation program called 'The Peoria Plan for Human Rehabilitation.'" He attributes the success of the program "to the combined efforts of ministers, educators, businessmen, social workers, and other groups in Peoria and hundreds of concerns throughout the country who all helped to make this humanitarian program a success." The Disabled American Veterans also honored DR. VONACHEN, awarding him the DAV Certificate of Merit. MR. WARREN WRIGHT, Past Commander of the Illinois DAV, made the presentation. SENATOR EVERETT M. DIRKSON, who addressed the meeting, also presented Awards to the winners of the DAV poster contest on Employment of the Physically Handicapped.

Recent Deaths

FRANK R. FERLAINO, M.D., 53, at Long Island College Hospital, September 2, of myocardial infarction. DR. FERLAINO was born in New York City, September 1, 1900. He attended Princeton University, 1919-1922 (B.S.), where he was a four-letter athlete, excelling in baseball, football, lacrosse, and wrestling; Princeton Graduate College, 1922-1923 (M.S.); and Johns Hopkins University School of Medicine, 1923-1927 (M.D.). He interned at Presbyterian Hospital Medical Center, New York City, 1927-1930; went into general practice in 1930, and into special practice in cardiac and pulmonary diseases in 1937. He served during World War I as Seaman First Class, USN. His first industrial affiliation was with American Telephone and Telegraph Company, 1929-1937. In 1944-1945 he was Associate Medical Director for Schenley Laboratories. In January, 1946, he became Medical Director at the executive offices of General Motors in New York City. He was a Diplomate of the American Board of Internal Medicine; Secretary of the Council on Post-Graduate Medical Education, American College of Chest Physicians; a member of the AMA, Kings County Medical Society, New York State Medical Society, American Trudeau Society, American Public Health Association, American Heart Association, American Association for the Advancement of Science, the Society of Medical Jurisprudence, and the Industrial Medical Association, in which he was District Counselor for the New York Metropolitan area. He was Consultant and member of the Medical Board of Stony Wold Sanitorium; Clinical Instructor in Industrial Medicine, New York Medical College, Flower and Fifth Avenue Hospitals; Clinical Assistant Physician, Roosevelt Hospital, and Assistant Attending Physician New York Post-Graduate Hospital and Dispensary. In 1948 Governor Dewey appointed him Chairman of the Medical Advisory Board of the State Athletic Commission, established by the Legislature to prepare stricter standards for the physical examinations of boxers and wrestlers. His resignation from that post in 1950 in protest against the Commission's laxity in adopting the Board's recommendations led to certain reforms in athletic practices in New York State. Lately he had been Assistant Clinical Professor of Industrial Medicine at New York University-Bellevue Medical Center, Institute of Industrial Medicine. During World War II he worked on penicillin production. In the New York State Medical Society he served on the Industrial Health and Accident Committee, and was protagonist of the establishment by that Society of a Council on Industrial Health. He had been a Director of the American Research and Education Foundation. For the past several years DR. FERLAINO had been an Associate Editor of *Industrial Medicine and Surgery*. As with all his numerous interests, he took this assignment seriously; his advice and counsel and the clear thinking he applied to its problems will be missed. Eager, vital, dynamic, he was a natural leader, an inspiration to those who worked with him. It is with a sense of great loss that we record his passing. Many there are who feel, with us, that they have lost a fine friend and a brilliant co-worker.

Frank R. Ferlaino, M.D.

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Watch your play"
—Wm. Tod Helmuth—*Ode to the Bacillus*

♏ = Scorpio — October 23-November 22

1953 NOVEMBER

November

CANST thou not minister to a mind diseas'd, pluck from the memory a rooted sorrow, raze out the written troubles of the brain, and with some sweet oblivious antidote cleanse the stuff'd bosom of that perilous stuff which weighs upon the heart? Therein the patient must minister to himself. Throw physic to the dogs; I'll none of it."

—*Shakespeare, Macbeth*

BUT nothing is more estimable than a physician who, having studied nature from his youth, knows the properties of the human body, the diseases which assail it, the remedies which will benefit it, exercises his art with caution, and pays equal attention to the rich and the poor." —*Voltaire*

☽ 1st Quar. ○ Full Moon ☾ 4th Quar. ● New Moon

1 ♏ S
1952—Louis I. Dublin retired as vice-president and statistician of the Metropolitan Life Insurance Company after 44 years of service; Ex-president, A.P.H.A.
"To be really cosmopolitan a man must be at home even in his own country"—T. W. Higginson

2 ♏ M
1905—Rudolph A. von Kolliker, noted Swiss anatomist and physiologist, Professor at Zurich, died at Wurzburg.
1844—James Read Chadwick born at Boston. President of American Gynecological Society; organized the Harvard Medical Alumni, and the Boston Medical Library.

3 ♏ Tu
1837—Louis Alibert, a French baron and famous dermatologist and chief of the Hospital Saint Louis, Paris, died of gastric cancer.
"In science the credit goes to the man who convinces the world, not to the man to whom the idea first occurs"—Osler

4 ♏ W
1912—Arthur Tracy Cabot of the Harvard Medical School, pre-eminent and leading genito-urinary surgeon, and organizer of the American Social Hygiene Association, died.
"By medicine life may be prolong'd, yet death will seek the doctor too"—Shakespeare

5 ♏ Th
1852—Daniel Drake, an American pioneer physician, died at Cincinnati. His crowning achievement was his book, "Diseases of the Interior Valley of North America."
1880—Alphonse Laveran, at a military hospital at Constantine, discovered the malaria plasmodium.

6 ○ Fr
1949—Clarence Olds Sappington, M.D., Dr. P.H., died at Chicago. Editor of *Industrial Medicine*. First to receive the Dr. P.H. degree from Harvard, and first to receive the Knudsen Award.
"It is better to live rich, than to die rich"—Samuel Johnson

7 ♏ Sa
1818—Raymond DuBois, a noted German physiologist at University of Berlin, died.
1825—School of Medicine of the University of Virginia opened. Formerly the School of Anatomy and Medicine.
"We boil at different degrees"—Ralph Waldo Emerson

8 ♏ S
1869—Max von Pettenkofer, Professor of Hygiene at Munich, founder of experimental hygiene, said, "The belief in something higher than ourselves is an intangible, unattainable ideal; it is the source of all human culture and all progress."

9 ♏ M
1931—The Medical History Section, College of Physicians, Philadelphia, celebrated the Twenty-Fifth Anniversary of the discovery of the Spirochita Pallida.
"Only presidents, editors, and people with tapeworms have the right to use the editorial 'we'"—Mark Twain

10 ♏ Tu
1879—Martin H. Fisher, Professor of Physiology, University of Cincinnati, specialist in colloid chemistry, born at Kiel, Germany.
1728—Oliver Goldsmith, physician and poet, born.
"Age breeds aches"—John Harington

11 ♏ W
1885—John M. Riggs, a prominent American dentist, ex-president of American Dental Association, died. Originated a therapy for pyorrhea alveolaris.
"The real problem of your leisure is to keep other people from using it"—George Ebbert

12 ♏ Th
1952—Wilbur A. Sawyer, retired Director of International Health, Rockefeller Foundation; distinguished scientist in tropical and preventive medicine; recipient of many awards; developer of the first successful vaccine against yellow fever, died at Berkeley, California.

♐ = Sagittarius — November 23-December 21

13 ♏ Fr
1866—Abraham Flexner born. Through his efforts a monumental contribution to medical education in America and throughout the world was developed.
1893—William P. Yant, research toxicologist, investigator in safety and industrial hygiene, born at East Sparta, Ohio.

14 ☽ Sa
1904—James H. Sterner, Medical Director, Eastman Kodak Company, and member of U.S. Advisory Board, Atomic Energy Commission, born at Bloomburg, Pennsylvania. President, Academy of Occupational Medicine, and member of the faculty of University of Rochester.

15 ♏ S
1847—Sir James Simpson, professor of Midwifery at Edinburgh, demonstrated the use of chloroform as an anesthetic in childbirth.
1280—Albertus Magnus, the Dominican Monk, the Artistotle of his period, died.

16 ♏ M
1951—Wilmer Cave Wright, professor of Greek at Bryn Mawr College, translator of Ramazzini's "De Morbis Artificum Diatriba" into English, died.
1948—Fred G. Cottrell, scientist and inventor of the electric dust collector, died.

17 ♏ Tu
1878—Hans Zinsser, Professor of Bacteriology at Harvard, author of "Rats, Lice, and History," born in New York City. He produced active immunization against typhus.
1917—Professor Franklyn P. Mall, the anatomist at Johns Hopkins, died at Baltimore.

18 ♏ W
1885—Robert A. Kehoe born at Georgetown, Ohio. Research Professor of Physiology, University of Cincinnati; Medical Director, Kettering Laboratory. Distinguished for his researches in lead intoxication. Received the 1949 Knudsen Award.

19 ♏ Th
1722—Leopold Auenbrugger, a native of Gratz, gave the world the important discovery of percussion of the chest based on experience on healthy chests and upon cadavers.
"Tis better to be alone than in bad company"—George Washington

20 ○ Fr
1866—Theodor Billroth, the famous Vienna surgeon and musician, wrote a musical prescription on Wurst for his friend, Dr. Hegar.
"Health is the second blessing that we mortals are capable of; a blessing that money cannot buy"—Walton

21 ♏ Sa
1555—George Agricola died at Chemnitz, Saxony. The foremost industrial physician of the Renaissance. Author of "De Re Metallica" (1556).
1911—Walter Wyman, Surgeon Gen., U.S.P.H., died at Fort Stanton.

22 ♏ S
1863—Alexander E. J. Yersin, a Swiss bacteriologist, who shared honors with Roux at the Pasteur Institute on diphtheria serum, and at Hongkong simultaneously with Kitasoto discovered the plague bacillus and serum for treatment, born at Rougemont, Switzerland.

23 ♐ M
1938—The International Conference against cancer took place at Paris and celebrated the discovery of radium by Pierre and Marie Curie.
"Health and cheerfulness mutually beget each other"—Addison

24 ♐ Tu
1945—Fearing that the enemy in World War II might use the deadly arsenical gas, British and the U.S. research chemists raced to develop an antidote. Britisher R. A. Peters and associates were successful, and published their article, "British Anti-Lewisite (BAL)."

25 ♐ W
1870—Edgar Leigh Collis born at Stourbridge, Worcestershire. Emeritus Professor at Wales University. Renowned for his researches in pneumoconioses in miners and industrial hygiene.
"Banished the doctor, and expell'd the friend"—Pope

26 ♐ Th
1914—William Henry Baker, Professor at Harvard Medical School, gynecologist, and founder of the Free Hospital at East Springfield, died at his home at Roberts, Waltham.
"In nothing do men more nearly approach the gods than in giving health to men"—Cicero

27 ♐ Fr
1890—May R. Mayers, Chief of Medical Unit and Assistant Director, Division of Industrial Hygiene, New York State Department of Labor, born in Newark, New Jersey. Distinguished author of many bulletins on the prevention and diagnosis of occupational diseases.

28 ☾ Sa
1876—Karl Ernest von Baer, famous naturalist, died at Dorpat. Professor and Director of the Anatomical Institute; father of the new embryology which became a comparative science; discovered the mammalian ovum.
"It is part of the cure to wish to be cured"—Seneca

29 ♐ S
1929—Victor C. Vaughn, beloved Professor and Dean at University of Michigan, died at Ann Arbor. Ex-President, A.M.A., and National Academy of Science.
"Extreme remedies are very appropriate for extreme diseases"—Hippocrates

30 ♐ M
1603—William Gilbert, physician to Queen Elizabeth, whose work, ranking beside Newton, established the theorem that the earth is a gigantic spherical magnet, died at Colchester, England.
"Prevention is better than cure"—Erasmus

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Johnson & Johnson

introducing

A "SPRAY-ON" SURGICAL DRESSING

FOR WOUNDS,

BURNS, AND ABRASIONS

AEROPLAST

TRANSPARENT • ELASTIC • OCCLUSIVE • STERILE

EXTENSIVE STUDIES[1,2] have conclusively demonstrated Aeroplast's broad usefulness as a definitive surgical dressing. In many instances, lesions complicated by infection, and unresponsive to treatment when dressed by conservative methods, healed uneventfully when Aeroplast was substituted. Laparotomies, appendectomies, thoracotomies, ileostomies, herniorrhaphies, burns, skin graft donor sites, and compound and openly reduced fractures are typical of the broad variety of cases in which Aeroplast has been used to advantage.

1. Choy, D.S.J. and Wendt, W.E.: U.S. Armed Forces M. J. 3:1241, Sept. 1952.
2. Choy, D.S.J.: A.M.A. Arch. Surgery. *In Press.*

AEROPLAST provides new efficiency and versatility as a protective dressing for routine use in surgical and traumatic wounds, burns, abrasions, excoriation, etc.

Sprayed directly onto the lesion from a self-contained aerosol "bomb", Aeroplast dries rapidly to form a transparent, flexible, occlusive plastic film which seals contaminants out and vital fluids and electrolytes in. Biologically and chemically inert, it is non-toxic, non-sensitizing, and mildly bacteriostatic. As a replacement for conventional gauze dressings in all their varied applications, Aeroplast offers significant advantages:

AEROPLAST DRESSINGS ARE TOUGH AND FLEXIBLE. They remain in place despite friction or the stress of motion. They withstand washing. Yet they are easily removed by simple "peeling" without distress to the patient.

AEROPLAST DRESSINGS ARE IMPERMEABLE TO BACTERIA. Properly applied to aseptic lesions, sterility is maintained as long as the dressing is allowed to remain intact. In addition, Aeroplast in itself is bacteriostatic.

AEROPLAST DRESSINGS ARE SEMI-PERMEABLE TO WATER VAPOR. Normal perspiration is permitted to escape, although loss of vital fluids and electrolytes—as in extensive burns — is effectively retarded.

AEROPLAST DRESSINGS ADHERE TO ANY DRY SURFACE OF THE BODY. Regardless of location and structure or the extensiveness of the area treated, Aeroplast dressings "fit" and maintain their integrity. They do not restrict circulation, respiration, or desirable movement.

AEROPLAST IS NON-TOXIC, NON-SENSITIZING, NON-ALLERGENIC. The vinyl resin base is inert; the film which forms is insoluble in body fluids; and the ethyl acetate-acetone solvent evaporates in seconds following application.

AEROPLAST DRESSINGS ARE TRANSPARENT. They permit critical evaluation of the progress of healing at all times without the necessity of removal and re-dressing.

AEROPLAST Liquid Surgical Dressing is an ethyl acetate-acetone solution of co-polymers of hydroxy-vinyl chloride-acetate and sebacic acid, 9.3% by weight, and modified maleic rosin ester, 3.1% by weight, with fluorochloro hydrocarbon gas as a propellant. STERILE.

Supplied in 6 oz. aerosol-type dispenser.

AEROPLAST is NOW available through your surgical supply dealer. For complete descriptive literature, write

AEROPLAST CORPORATION
420 Dellrose Avenue, Dayton 3, Ohio

*new **PROVIDES MECHANICAL MASSAGE WITH HEAT**—automatically controlled, electrically timed—completely adjustable to tolerance of the individual patient—Short duration of treatment keeps workers on the job during the period of therapy, eliminating waiting and other delays . . .

*new **THERAPY IS PLEASANT—IMPERSONAL**—helping to relieve psychic stress—creating a sense of **WELL BEING** so often needed in relieving underlying causes of pain—completely eliminates personality conflicts.

There is Nothing Like...

SACRO-MATIC*

NEW

IN THE TREATMENT OF TRAUMATIC OR INDUSTRIAL BACK . . .

*new **NO EXPENSIVE INVESTMENT NEEDED** as **SACROMATIC** may be rented at an extremely moderate cost —*created specifically for industrial medicine*—the **SACROMATIC** table is easy to use—dependable—trouble free—handsomely designed and engineered at Ohio State University. You will be proud to have **SACROMATIC** in your department.

In any therapy involving massage and heat— SACROMATIC will do it better—quicker—and at considerably less cost than any method you may now be using! Completely eliminating the need for hard-to-find physiotherapists.

NEW
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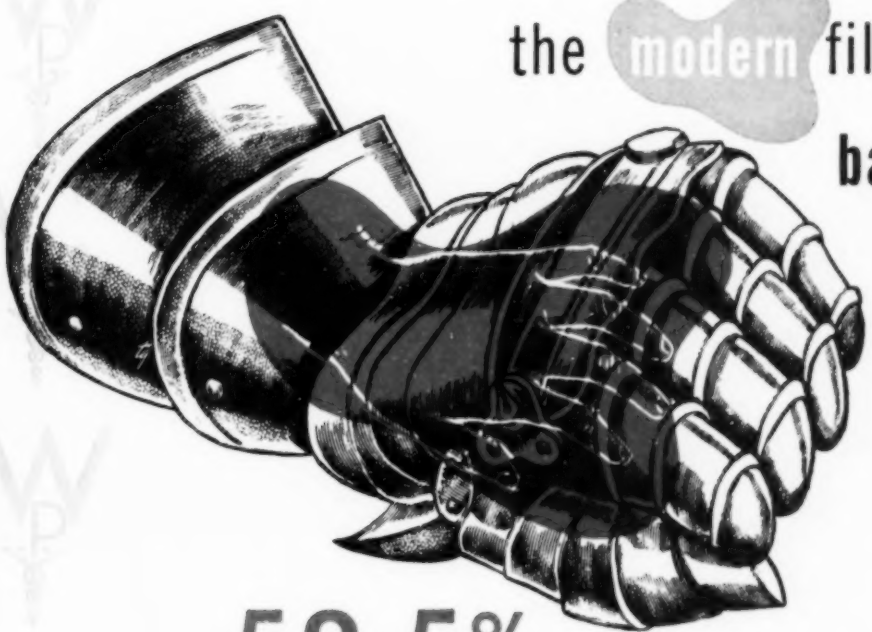
skin protective cream

the modern film barrier



52.5% silicone makes the difference

ONLY *Pro·derma* contains 2 to 20 times more free silicone than any other product available—chemically inert, flexible, greaseless, water and oil repellent.

prevents contact dermatitis

from: water • soap • household cleansers • wool
saliva • urine • rectal and vaginal discharge
cotton • oils • rust preventatives • fuels
inspection fluids • alkalis • acids • paints

Does not sensitize or irritate

Easily removed with LOWILA cake

Available at pharmacies in 1 oz. tubes and 1 lb. jars

SAMPLES ON REQUEST

Westwood Pharmaceuticals • 468 Dewitt Street, Buffalo 13, N.Y.

DIVISION OF FOSTER-MILBURN CO.

Greaseless, long-lasting SKIN PROTECTION

for industrial dermatoses and contact allergies

NOT removed by ordinary washing, COVICONE Cream offers the long-lasting qualities often desired in the management of industrial and allergic dermatoses. An entirely new formula, COVICONE is a special *plasticized* combination of silicone, nitrocellulose and castor oil. Applied to the skin, it forms an effective but invisible physical barrier against sensitizing and irritating agents.

Suspended in a vanishing cream base, COVICONE is easy to apply, is not sticky or greasy. To build up the protective layer, the cream is applied twice daily for 10 days to two weeks. Effective protection can then be maintained indefinitely with a single application every one or two days. COVICONE is indicated wherever skin protection is desired from environmental substances; there are no contraindications except premature application on wet, exudative lesions. COVICONE is available at pharmacies in one-ounce tubes with slip-off labels; also one-pound jars.

Abbott

new plasticized cream withstands washing

COVICONE CREAM
TRADE MARK
(Abbott's Protective Skin Cream)

Announcing— a truly elastic bandage that keeps its stretch in the laundry

New TENSOR is the elastic bandage woven with Heat-Resistant live rubber threads. You can even sterilize it!

As you know, it takes live rubber threads to make a truly elastic bandage. But up to now live rubber has posed a laundry problem . . . a problem intensified by the regular high-temperature drying process in hospital laundries.

But now, at no increase in price, there's a new Tensor that needs no special laundry care whatever. New Tensor with Heat-Resistant live rubber threads was tested for hours on end in a dryer at a constant 280° F.—with no appreciable loss of stretch!

And this new Heat-Resistant elastic bandage has the other great Tensor feature—it lets the doctor control the pressure. You get full-range pressure control because the live rubber threads in Tensor make it twice as elastic as old-style non-rubber bandages.

At present, available in hospital bulk put-up.

May we send you one of our New Tensor *demonstration* kits today?

New TENSOR®
ELASTIC BANDAGE

Woven with Heat-Resistant live rubber threads

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COMPARE THESE ELASTIC BANDAGES

One-foot lengths of heat-resistant Tensor and elastic bandage made with ordinary rubber are stretched after high-temperature drying. Tensor snaps back to original length. The other bandage stays stretched out. Its elasticity is gone.

POWERFUL ALLIANCE . . .

BICILLIN® —— SULFAS

. . . for potent action against a wider range of organisms—the streptococci, pneumococci, staphylococci, E. coli, gonococci, meningococci, shigella and H. influenzae—responsible for the majority of infections encountered in everyday practice.

BICILLIN

The new form of penicillin—possesses characteristics which set it apart from older forms of penicillin. BICILLIN is particularly adapted to oral use. Outstanding is BICILLIN's relative insolubility, which gives it unparalleled uniformity of absorption;[1] its lack of taste; the apparent ease with which patients tolerate it; and the substantial penicillin blood levels produced by its oral form.

SULFOSE®

Unequalled in effectiveness, unsurpassed in safety—proved to be the only sulfa preparation[2] among the three leading preparations tested which produces sulfonamide blood levels above minimal requirements established by the Council of Pharmacy and Chemistry[3] of the AMA.
(This level is 10 to 15 mg. per 100 cc. in acute infections.)

BICILLIN®—SULFAS

Dibenzylethylenediamine Dipenicillin G and Triple Sulfonamides

SUPPLIED: Suspension, bottles of 3 fl. oz. Tablets, bottles of 36. Each teaspoonful (5 cc.) of Suspension and each Tablet contains 150,000 units of BICILLIN and 0.5 Gm. triple sulfonamides.

1. Cathie, I.A.B., and Mac Farlane, J.C.W.: Brit. M. J. 1:805 (April 13) 1953
2. Berkowitz, B.: Antibiotics and Chemotherapy 5:618 (June) 1953
3. New and Nonofficial Remedies, J. B. Lippincott Co., Philadelphia, 1950

Wyeth®

Philadelphia 2, Pa.

Major advance in dermatitis control:

The new direct approach to the control of dermatitides is hormonal, enlisting the antiphlogistic and antiallergic potency of compound F—foremost of the corticosteroid hormones.

The new objective is adapting corticoid therapy to simple inunction treatment, and obtaining relief in various forms of dermatitides within days—sometimes within hours.

The new attainment is Cortef Acetate Ointment, which rapidly controls edema and erythema, halts cellular infiltration, arrests pruritus in such harassing skin problems as atopic dermatitis, contact dermatitis, pruritus vulvae and ani, neurodermatitis, and seborrheic dermatitis.

Cortef*

Acetate Ointment

Supplied: *Cortef Acetate Ointment is available in 5 Gm. tubes in two strengths—2.5% concentration (25 mg. per Gm.) for initial therapy in more serious cases of dermatitis, and 1.0% concentration (10 mg. per Gm.) for milder cases and for maintenance therapy.*

Administered: *A small amount is rubbed gently into the involved area one to three times a day until definite evidence of improvement is observed. The frequency of application may then be reduced to once a day or less, depending upon the results obtained.*

*TRADEMARK FOR UPJOHN'S BRAND OF HYDROCORTISONE

A product of Upjohn Research *for medicine ... produced with care ... designed for health*

THE UPJOHN COMPANY, KALAMAZOO, MICHIGAN

Melmac*

Orthopedic Composition

for lighter, thinner, stronger casts

Davis & Geck's Melmac Orthopedic Composition is a melamine resin,[1] a new powder with catalyst which *doctors* add to the water in which *they* wet plaster bandages. With Melmac Orthopedic Composition, *doctors* need only *half the usual number of plaster of Paris bandages.* Melmac has been proven by extensive clinical trials.[1,2]

Greater comfort for patients

Cast A—ordinary plaster of Paris

Cast B—plaster *fortified with Melmac*, is half thickness of cast A and weighs less

6 great advantages of casts made with Melmac Orthopedic Composition

1. *Four times the early strength* and over twice the dry strength of ordinary plaster of Paris casts.
2. *Lighter, thinner and stronger casts* provide added comfort and support.
3. *Water and urine resistant.* Does not disintegrate even after several days soaking.
4. *Permits better x-ray penetration* due to thinness of cast.
5. Economical—*50% fewer bandages or less needed;* saves the doctor time.
6. *Conveniently packaged* to permit using as much or as little as is needed for a given case, avoiding waste.

Supplied: In cartons of 3.65 lb. containing six cans of 9.74 oz. (276 Gm.) each; available through surgical supply dealers handling D & G products.

Davis & Geck, Inc.

A —— American Cyanamid Company

57 Willoughby Street, Brooklyn 1, N. Y.

Sutures and other surgical specialties

*TRADEMARK

(PRODUCT OF AMERICAN CYANAMID COMPANY

Use of Melmac requires no new technique

To use bandages and splints wetted with Melmac solution, no new technique for applying casts need be learned. Plaster rolls or splints are soaked in the Melmac solution in the usual manner, the excess solution is pressed out, and the cast applied with the same technique as with ordinary plaster bandages and splints.

Note:

Cobey,[3] reports not one person allergic to Melmac in applying 1000 casts.

references:

1. A. W. Spittler, Col., (M.C.), U.S.A., J. J. Brennan, Lt. Col., (M.C.), U.S.A., J. W. Payne, Capt., U.S.A.F. (M.C.), American Academy of Orthopedic Surgeons, Jan. 26-31, 1952, Chicago, Illinois.
2. M. C. Cobey, M.D., F.A.C.S., Professor of Orthopedic Surgery, Georgetown University and Senior Attending Orthopedic Surgeon, Children's Hospital, Washington, D.C., The American Surgeon, Vol. XVIII, No. 4, April, 1952, pp. 413, 415.
3. M. C. Cobey, M.D., F.A.C.S., Washington, D.C., private communication.

Davis & Geck manufactures a complete line of surgical sutures. Diameter for diameter, D&G Surgical Gut is the strongest available.

Nothing can demoralize the worker more than a persistent itch. 'Quotane'—S.K.F.'s new topical anesthetic—stops itching and soothes pain in the variety of contact and other dermatoses encountered in industrial practice.

Tests in the rabbit cornea indicate that 'Quotane' is 10 times more active an anesthetic than dibucaine, the most effective of the "-caines".

Unlike the "-caines", 'Quotane' has a low index of sensitivity.

QUOTANE* LOTION — *for moist lesions*

'QUOTANE' OINTMENT — *for dry lesions*

Smith, Kline & French Laboratories, Philadelphia

*T.M. Reg. U.S. Pat. Off. for dimethisoquin hydrochloride, S.K.F.

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SUPPOSITORIES

with **cod liver oil**

are safe, conservative therapy in **hemorrhoids**

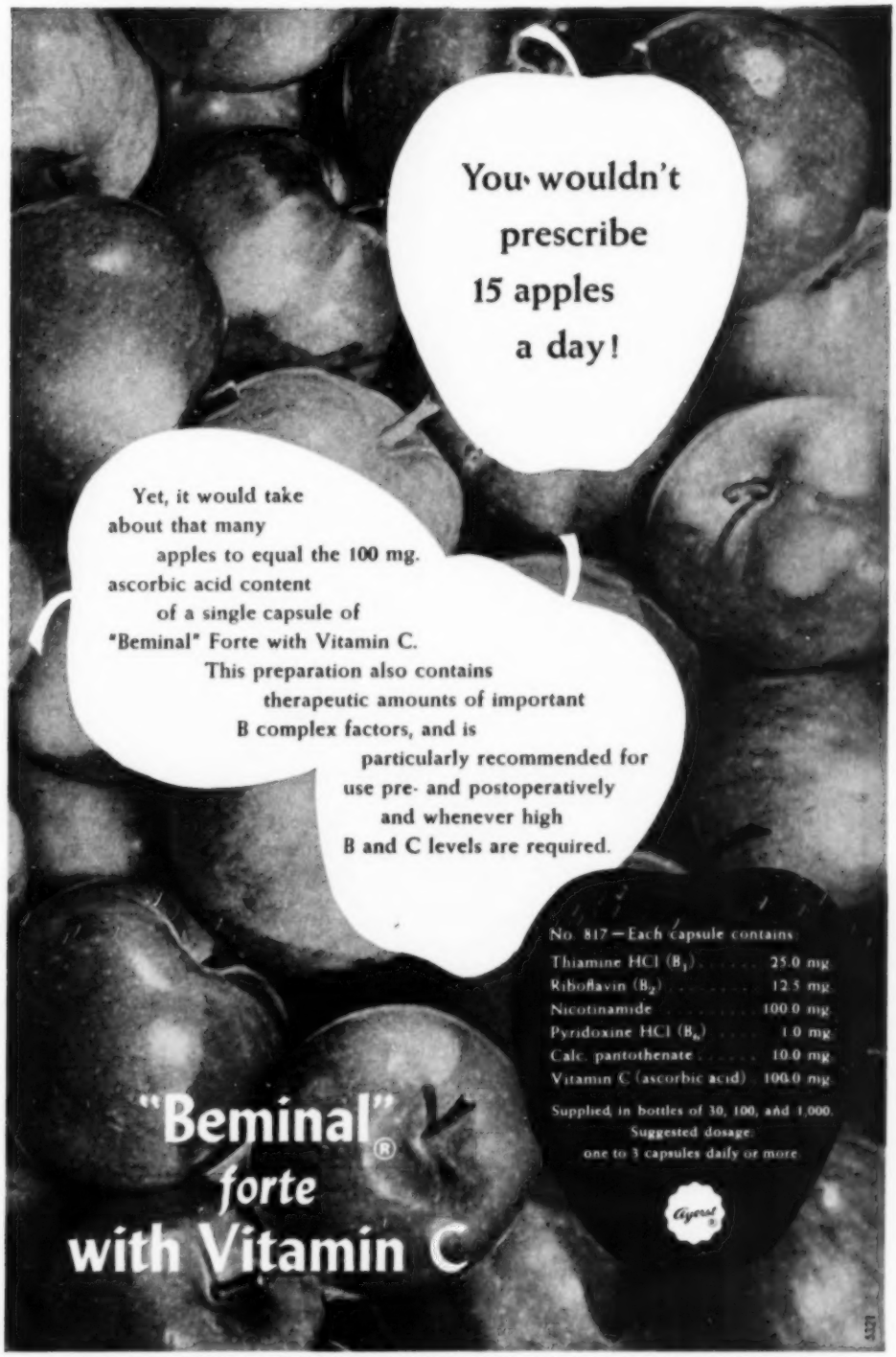
more effective . . . because they provide healing crude Norwegian cod liver oil (rich in vitamins A and D and unsaturated fatty acids, in proper ratio for maximum efficacy).

more comforting . . . emollient, protective, lubricant to relieve pain, itching and irritation rapidly . . . to minimize bleeding and reduce congestion.

safe, conservative . . . . . contain no styptics, narcotics or local anesthetics, so they will not mask serious rectal disease. Easy to insert and retain.

Composition of Desitin Suppositories: crude Norwegian cod liver oil, lanolin, zinc oxide, bismuth subgallate, balsam peru, cocoa butter base. Boxes of 12 foil-wrapped suppositories.

for **samples,** please write . . . . **DESITIN** CHEMICAL COMPANY ●
70 Ship Street • Providence 2, R. I.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Yet, it would take about that many apples to equal the 100 mg. ascorbic acid content of a single capsule of "Beminal" Forte with Vitamin C. This preparation also contains therapeutic amounts of important B complex factors, and is particularly recommended for use pre- and postoperatively and whenever high B and C levels are required.
No. 817 — Each capsule contains:
Thiamine HCl (B_1) 25.0 mg.
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Whenever frequency, pain, urgency and straining occur . . . wherever the patient may be . . .

PYRIDIUM swiftly secures safe urogenital analgesia in patients suffering from cystitis, prostatitis, urethritis, or pyelonephritis. PYRIDIUM is compatible with antibiotics or other specific, corrective therapy.

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PYRIDIUM *is the registered trade-mark of Nepera Chemical Co., Inc. for its brand of phenylazo-diamino-pyridine HCl. Merck & Co., Inc. sole distributor in the United States*

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Manufacturing Chemists

RAHWAY, NEW JERSEY

"COUGH...

one of the most frequent symptoms for which the patient seeks medical attention."[1]

SYNEPHRICOL®
THENFADIL®

...relieves the cough due to colds
...eases the allergic cough

●

Synephricol Thenfadil acts by prompt and prolonged decongestion of bronchial mucous membranes, by mild central sedation, and by decreasing sensitivity of the pharyngeal mucosa through antihistaminic action.

FORMULA:
(4 cc. teaspoonful)

Neo-Synephrine® hydrochloride	5.0 mg.
Thenfadil hydrochloride	4.0 mg.
Codeine phosphate*	8.7 mg.
Potassium guaiacol sulfonate	70.0 mg.
Ammonium chloride	70.0 mg.
Menthol	1.0 mg.
Chloroform	0.0166 cc.
Alcohol	8%

**Exempt narcotic*

DOSAGE:

Adults—1 or 2 teaspoonfuls every two to four hours, not to exceed 5 doses in twenty-four hours.

Children 6 to 12 years—½ to 1 teaspoonful four or five times daily.

BOTTLES OF 1 PINT AND 1 U. S. GALLON.

WINTHROP

Winthrop-Stearns INC.
NEW YORK 18, N. Y. WINDSOR, ONT.

1. Banyai, A. L.: Management of Cough in Daily Practice. *J.A.M.A.*, 148:501, Feb. 16, 1952.

Synephricol, Neo-Synephrine (brand of phenylephrine) and Thenfadil (brand of dethylandiamine), trademarks reg. U.S. & Canada

Now available for civilian use—

U. M. A. PNEUMATIC TOURNIQUET

The tourniquet that is accepted and now being used by the U.S. Military Services

A Complete Unit

Manufactured in strict compliance with government specifications and supplied with a compact dustproof and waterproof aluminum carrying case.

Soundly engineered and sturdily built for long periods of carefree service.

Absolutely leak proof.

ADVANTAGES

Quick and simple application.

Freedom from leakage permitting prolonged application.

Wide surface envelope to prevent nerve and arterial injury and postoperative pain.

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Easily and quickly inflated with a few strokes of the pump.

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the season
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TERRAMYCIN®

BRAND OF OXYTETRACYCLINE

The value of Terramycin in promptly controlling otitis media, severe sinusitis, laryngotracheobronchitis, bacterial pneumonia and virtually all infections of the respiratory tract, due to or complicated by the many organisms sensitive to Terramycin, is now a matter of clinical record.

Because of its excellent toleration and rapid response, Terramycin is a therapy of choice for bacterial respiratory tract infections. Among the convenient dosage forms of Terramycin are Capsules, Tablets (sugar coated), good-tasting Oral Suspension, non-alcoholic Pediatric Drops, Intravenous for hospital use in severe infections and various topical preparations including Troches, Nasal and Aerosol for adjunctive therapy.

Pfizer

PFIZER LABORATORIES
Division, Chas. Pfizer & Co., Inc., Brooklyn 6, N. Y.

In infectious and allergic rhinitis and sinusitis

Biomydrin "is effective as an antibiotic in clearing the nose of pathogenic organisms and purulent secretions. In many cases, sterile cultures were obtained after a brief period of treatment."

Antibiotics & Chemotherapy *3*:299 (March) 1953.

Improvement in 113 of 124 Patients*

Diagnosis	Number of patients	Improved
Chronic catarrhal rhinitis	11	11
Chronic allergic rhinitis	26	25
Right maxillary sinusitis	2	1
Chronic naso-pharyngeal catarrh	6	6
Chronic suppurative sinusitis	3	3
Coryza, Head cold, Catarrhal rhinitis	58	51
Influenza	2	1
Acute catarrh	4	3
Hypertrophic rhinitis	12	12
TOTAL	124	113 (91.1%)

* Eye, Ear, Nose and Throat Monthly *32*:512 (Sept.) 1953.

BIOMYDRIN

"BIOMYDRIN" AND "THONZONIUM BROMIDE" ARE TRADEMARKS OF NEPERA CHEMICAL CO., INC.

The Biomydrin formula

THONZONIUM BROMIDE 0.05%. Synthesized in the Nepera laboratories. Exceedingly potent antibacterial. Greatly enhances the antibiotic activity of neomycin and gramicidin. Reduces surface tension, facilitating spreading and penetrating. Mucolytic.

NEOMYCIN SULFATE 0.1%. Effective against gram-positive and gram-negative organisms.

GRAMICIDIN 0.005%. Effective against gram-positive organisms.

PHENYLEPHRINE HCl 0.25%. Widely preferred vasoconstrictor.

THONZYLAMINE HCl 1.0%. *Therapeutic concentration* of this effective antihistaminic aids in controlling local allergic manifestations.

- Prompt, prolonged shrinkage of nasal mucosa without secondary congestion.
- pH is 6.2. Isotonic and buffered.
- Does not interfere with ciliary activity.
- Spray covers larger area than could be reached by drops.
- Available on prescription only.

DOSAGE: Adults—2 or 3 sprays in each nostril; 4 or 5 times a day as needed, or as directed by physician. Children—1 or 2 sprays in each nostril; 4 or 5 times a day as needed, or as directed by physician.

Nepera Chemical Co., Inc. Pharmaceutical Manufacturers, Yonkers 2, N. Y.

Upjohn

oral
estrogen-progesterone
effective in
menstrual disturbances:

Cyclogesterin
TRADEMARK, REG. U. S. PAT. OFF.
tablets

Each scored tablet contains:

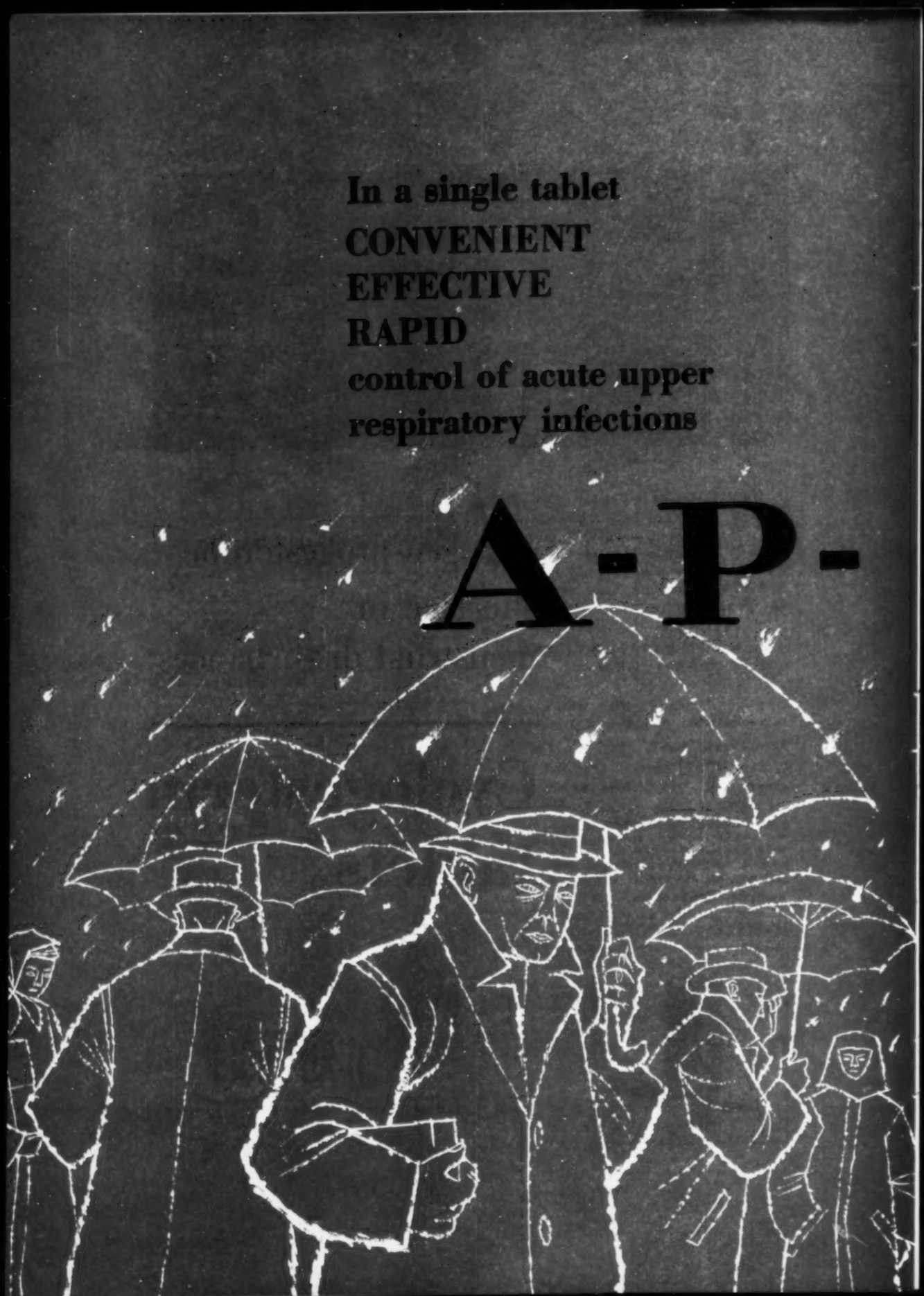
Estrogenic Substances* .. 1 mg.
(10,000 I.U.)

Progesterone ..... 30 mg.

**Naturally-occurring equine estrogens (consisting primarily of estrone, with small amounts of equilin and equilenin, and possible traces of estradiol) physiologically equivalent to 1 mg. of estrone.*

Available in bottles of 15 tablets.

The Upjohn Company, Kalamazoo, Michigan


In a single tablet
CONVENIENT
EFFECTIVE
RAPID
control of acute upper
respiratory infections
A-P-

Finke[1], urging a more extensive use of penicillin "at an early stage of respiratory infection," states: "Nearly all minor upper respiratory infections may be precursors of more severe conditions, especially in persons with previous major respiratory episodes. Therefore, the use of antibacterial agents in the treatment of bronchitis and similar illnesses has been justly advocated as a rational measure..."

CILLIN

Each A-P-Cillin tablet combines the following proved therapeutic agents:

1 • APC—for analgesic and antipyretic action—to relieve systemic symptoms.

Acetylsalicylic acid	2½ gr.
Phenacetin	2 gr.
Caffeine	½ gr.

2 • ANTIHISTAMINE—for local symptomatic relief, particularly from profuse nasal discharge, and for mild sedation.

Phenyltoloxamine dihydrogen citrate	25 mg.

3 • PENICILLIN—for prevention and control of secondary bacterial infections.

Procaine penicillin G	100,000 units

For the common acute upper respiratory infections, the usual adult dose is 2 tablets three times a day, best continued for at least three days. The tablets should be taken at least one hour before meals or two hours after meals. White Laboratories, Inc., Kenilworth, N. J.

—supplied in bottles of 50 and 500 tablets.

1. Finke, W.: A.M.A. J. Dis. Child. 83:755, 1952.

ANNOUNCING

Solution Intravenous Calcium Disodium VERSENATE*

At Long Last...Safe...Effective Therapy in Lead Poisoning

Solution Calcium Disodium VERSENATE*, Riker, proves effective in the reduction of blood and depot lead in lead poisoning—acute or chronic, and in lead encephalopathy.

It is recommended for prophylactic use against exacerbations in chronic lead poisoning. It is worthy of trial in mercury and other heavy metal poisoning, and is of potential value for the removal of radioactive and nuclear fission products such as plutonium, yttrium, etc.

Supply—Calcium Disodium VERSENATE* is available in boxes of six 5 cc. ampuls, each containing 1 gram, for dilution and intravenous infusion. Detailed instructions accompany each ampul.

Literature available upon request.

Reference

Hardy, H. A., et. al.: Calcium Ethylenediaminetetraacetate in Treating Heavy Metal Poisoning, A. M. A. Arch. Ind. Hyg. and Occup. Med. 7:137 (1953).

HERE, for the first time, is effective treatment for heavy metal poisoning, without organ injury during excretion.

This achievement is made possible by chelation, a process long used in industry. In this reaction the metal atom is joined to other atoms in the molecule by both ordinary and coordinate valence forces (resonance bonds) which are responsible for depressing ionization of the metal atom. The resulting chelate is water soluble, nontoxic, virtually nonionized, and nonmetabolized, and is excreted as an intact molecule. Kidney damage does not result.

Solution Calcium Disodium VERSENATE* is the calcium chelate of ethylenediamine tetraacetic acid (EDTA). In the body calcium is displaced by lead forming the lead chelate which is rapidly excreted. It forms similar chelates with certain other heavy metals.

Solution Calcium Disodium VERSENATE* is recommended for administration—after proper dilution—by intravenous infusion only.

*Versenate is the registered trademark of the Bersworth Chemical Company.

RIKER LABORATORIES, INC. 8480 BEVERLY BLVD. • LOS ANGELES 48, CALIF.

In the new alphabet of penicillin therapy . . .

easy-to-give PERMAPEN® aqueous suspension

. . . for intramuscular administration, particularly as a prophylactic measure in rheumatic fever, or adjunctively with other penicillin therapy of sensitive infections. Levels lasting as long as 14 days from one injection. Supplied in single-dose STERAJECT® disposable cartridges containing 600,000 units of DBED penicillin each with sterile foil-wrapped needle. For use with your Pfizer Steraject syringe.

PERMAPEN® FORTIFIED

aqueous suspension

. . . multiplies therapeutic benefits with the combined higher blood levels of 300,000 units procaine penicillin and the sustained blood levels of 300,000 units DBED penicillin. Supplied in single-dose disposable STERAJECT cartridges each with sterile foil-wrapped needle.

easy-to-take PERMAPEN® oral suspension

. . . particularly for the treatment of uncomplicated infections due to pneumococci, streptococci, staphylococci and gonococcus as well as other penicillin-sensitive organisms. Supplied in 2 oz. bottles providing 300,000 units DBED penicillin in each peach-flavored teaspoonful.

Pfizer PFIZER LABORATORIES, BROOKLYN 6, N. Y.
DIVISION, CHAS. PFIZER & CO., INC.

NEW!

For Gastro-Intestinal Dysfunction

An Improved Anticholinergic Agent

'Elorine Sulfate' relieves spasm and hypermotility of the gastro-intestinal tract, with *negligible side-effects*. It is an excellent adjunct in peptic ulcer therapy. As an anticholinergic drug, 'Elorine Sulfate' effectively inhibits neural stimuli at those ganglia and effectors where the presence of acetylcholine mediates transmission of stimuli. Clinical data show profound inhibiting effect on intestinal motility in doses of 50 to 75 mg. In this effective dosage range, side-effects are minimal.

Lilly

PULVULES

ELORINE SULFATE

(*Tricyclamol Sulfate, Lilly*)

For spasmolysis *without* sedation—in 25 and 50-mg. pulvules.

PULVULES

CO-ELORINE

(*Tricyclamol Sulfate and Amobarbital, Lilly*)

Formula: 'Elorine Sulfate' 25 mg.
'Amytal' (Amobarbital, Lilly) 8 mg.

Combines 'Elorine Sulfate' with 'Amytal' to provide mild sedation in addition to the spasmolytic effect.

INDUSTRIAL MEDICINE AND SURGERY
NOVEMBER, 1953

Beryllium Oxide Poisoning

JAN LIEBEN, M.D., Industrial Hygiene Physician
Bureau of Industrial Hygiene, Connecticut State Department of Health
ANDREW J. JACKSON, M.D., Medical Director
American Brass Company, Waterbury, Connecticut

IN A PAPER given at the Saranac Symposium of the American Trudeau Society in 1948, Dr. Andrew J. Jackson, Medical Director of the American Brass Company, Waterbury, Connecticut, described six cases of beryllium poisoning that had occurred among employees of the company.

This paper is intended to review and render a five-year follow-up of the cases and histories presented in Dr. Jackson's paper, and to report on three further cases which occurred after Dr. Jackson's presentation.

From 1932 to 1946, the Waterbury Branch of the American Brass Company manufactured a beryllium copper alloy. A beryllium copper alloy containing about 4% of beryllium was melted with new electrolyte copper and an appropriate amount of nickel. The melting was done in a crucible-type furnace. After melting, the alloy was poured into cast iron molds for rolling, or into billets for extrusion. The melting was all done in one furnace at one location in the casting shop where there was good ventilation through suitable covering hoods and forced drafts.

In the processing of any copper alloy base including beryllium copper alloy, a large amount of scrap is formed. This scrap along with scrap returned by customers was bundled in the scrap room. In some cases, the scrap was oily, and, in order to burn off this oil, the scrap had to be heated. In this heating operation, some oxide or scale was probably formed on the surface of the metal.

In the immediate vicinity of the casting shop are the scrap room, shear room, and core room. Approximately 300 persons were potentially exposed to beryllium in the casting shop and the adjacent departments. However, none of the beryllium cases described in Dr. Jackson's paper nor the ones discovered later were directly employed in the casting of beryllium copper.

Table I gives the occupation of the nine cases of beryllium poisoning.

Three men worked in the casting room although not near or at the beryllium crucible, two in the scrap room, one in the shear room, and one in the core room. The electrician and welder worked all over the plant.

TABLE I

	Occupation		Length of Potential Exposure
1.	C.M.—Foreman—Scrap Room	Described by Dr. Jackson	11 years
2.	J.V.—Core Room		3 years
3.	J.M.—Shear Room		11 years
4.	A.O.—Scrap Room		10 years
	Shear Room		6 years
5.	V.P. Casting Shop	Discovered since Dr. Jackson's Paper	5 years
6.	A.Z.—Casting Shop—		2 years
7.	J.A.—Electrician		11 years
8.	A.P.—Casting Shop		5 years
9.	E.P.—Welder		

All the cases worked in the plant for a considerable number of years and in all of them, except in one, A.P., the diagnosis established at Waterbury was confirmed at Saranac by the Trudeau Foundation and in six cases established by autopsy.

Cases

CASE 1—C.M.—Foreman in the scrap handling department, aged 64 years—potential beryllium exposure 11 years. His first symptoms started in 1938 when he was treated for asthma, which caused no disablement. He worked till the day of an accident which caused his death from retroperitoneal hemorrhage and fractured pelvis.

On autopsy his lungs showed a diffuse pulmonary fibrosis of a peculiar type which, after microscopic study at the Trudeau Foundation, was diagnosed as sarcoid granulomatosis. Other findings were: cor pulmonale, bronchopneumonia, cholelithiasis, old pyelonephritis.

The second case—J.V.—an employee in the core room, was exposed to beryllium for about three years. The onset of his illness was in 1938. He became disabled in December, 1938, and died in April, 1943. At the time of death, he was assumed to have silicosis, and his autopsy findings were: nodular fibrosis of the lung; lobar pneumonia, probably tubercular of the right lung; cor pulmonale; silicosis with infection; lobar pneumonia superimposed upon silicosis. The lung tissue was sent to the Trudeau Foundation for further study and reported as positive for sarcoidosis, very closely resembling the first case and closely resembling the Salem cases.

The third case was that of J.M., 50 years of

age, who was employed in the shear room of the casting shop from July, 1932, to November, 1944. His period of exposure was 11 years. The onset of his symptoms appeared about 1944, and he died in November, 1945. This man was sent to the Trudeau Foundation for observation and study, and, during the course of his physical examination, he had a coronary attack, or, at least, he was presumed to have had a coronary attack. He died a few days later, and was autopsied, and the findings were: diffuse pulmonary fibrosis; pulmonary sarcoidosis; dilatation and hypertrophy of the right ventricle; splenomegaly; cortical adenomata of the adrenals; benign prostatic hypertrophy; abdominal sarcoid lymph nodes. His lungs were ashed and spectrographic study showed that the lung ash contained beryllium.

The fourth case was that of A.O., 52 years old, who was employed in the scrap room as a sorter. The period of his exposure was about 10 years, actually from 1932 to 1942, and the onset of his symptoms appeared about 1942. In September, 1942, he became disabled and he died in 1946. At that time, Dr. Jackson was of the opinion that he probably had a tuberculous silicosis. His lungs were sent to the Trudeau Foundation, and it proved to be a positive case of sarcoid granulomatosis. The autopsy findings on this man were: pulmonary fibrosis; chronic cor pulmonale; sympathetic polycythemia; right heart failure with peripheral edema; generalized chronic passive congestion; pulmonary sarcoidosis (microscopic).

The fifth case described by Dr. Jackson was that of V.P., who was employed in the casting shop from 1937 to 1943. This man was born in the United States; was 24 years old. His history of exposure was for approximately six years. His symptoms began in 1943 when he was rejected by the draft board after a radiograph of his lungs was made and he was found to have had a fibrosis, which was interpreted by the United States Army as a case of silicosis. He became partially disabled in 1944. He has been examined at the Trudeau Foundation on two occasions, and was held as a sarcoid suspect.

However, this opinion was reversed by the Trudeau Foundation in 1950 following a third examination, when the Army diagnosis of silicosis was reaffirmed. This change of diagnosis was the result of a complete examination in 1950 which showed only one definite abnormality, namely, the chest x-ray. The report read: "Nodules throughout both lung fields especially in the peripheral portions of the upper halves are larger than in previous x-rays but they are discrete. There is no evidence of coalescence."

Impression: Comparison with previous chest roentgenograms shows progression in the size of the nodules especially in the peripheral portions of both upper halves. This generalized discrete nodulation is compatible with the roentgenological diagnosis of simple silicosis stage I.

The maximum breathing capacity, pulmonary volumina arterial blood gases and A-A. O_2 difference, response to exercise, blood chemistry, and electrocardiograms are within normal limits. There is a slightly increased number of red blood corpuscles and a slightly high hemoglobin. His capacity for physical exercise is in the low normal range. Dr. Wright concludes: "The chest roentgenogram and the laboratory data are entirely compatible with silicosis, but the history of exposure to free crystalline silica is shorter than usual—only five years in the foundry. In spite of this, my present opinion is that the most likely diagnosis now is that of atypical (precocious silicosis)." Mr. V.P. worked as a salesman for a bottling company after leaving the plant until 1949. Since then, his condition has somewhat deteriorated, but he is still working on a part-time basis.

The sixth case, A.Z., 28 years old, was employed in the casting shop. He was a helper on the conveyors from September 7, 1939, to August 11, 1940. He was a shear operator, cutting nickel and scrap from August 11, 1940, to December 23, 1944. During the latter period, he had a variety of jobs in the scrap room. His period of exposure, then, must be considered to be five years. He became disabled in 1944, when he applied for a leave of absence, stating that he was progressively losing weight and was having shortness of breath and felt exhausted. His chest was x-rayed and pulmonary fibrosis was found. In 1946, he was examined by the Trudeau Foundation where a gland was removed from his left axilla which yielded positive findings consistent with sarcoid. This patient continued a downhill course for over five years. He was unable to work and finally died in 1949.

The report from the Trudeau Foundation following postmortem examination of the lungs was: "Acute pulmonary tuberculosis with extensive necrosis and cavitation superimposed upon an advanced chronic pulmonary granulomatosis such as is present in individuals having exposure to beryllium. The two diseases exist without apparent interrelationship."

Of the six cases originally described in Dr. Jackson's paper, two were living at the time of presentation. Of these cases, one has since died and has been proved a case of beryllium sarcoidosis. The other is still alive, and, after further study at Saranac, has been declared a case of silicosis and the diagnosis of beryllium intoxication has been discontinued.

Since 1947, three further cases have been discovered from among the exposed population of the American Brass Company. Two of these have been proved cases of beryllium poisoning, while one is still under study.

J.A., electrician, age 55, with the company since 1944. He worked in the casting shop for three months in 1944, putting up electric lights. In 1946, he rewired all the furnaces in the casting shop. He also worked in other sections of the plant. Symptoms started in 1947, when he lost almost 70 pounds and became progressively

dyspneic. This dyspnea caused him to stop work in June, 1948. While unemployed, he regained 25 pounds, but his dyspnea did not improve. Other notable symptoms were cough and cyanosis of the finger nails. He was studied at Saranac, and the summary of the x-ray report was: lung findings compatible with the diagnosis of pulmonary chronic "granulomatosis" of the type seen in beryllium workers. This man gradually deteriorated with progressing lung symptoms, and died in June, 1949. Autopsy revealed that both lungs showed a diffuse granulomatosis formation characterized by stellate lesions predominantly cellular, tracheobronchial lymph nodes appeared hyperplastic—pulmonary granulomatosis as observed in beryllium workers.

A.P., born 1889, was a buffer in a different plant from 1918 to 1927. He became an employee of the Brass Company in 1929. He originally started in the shipping department and was laid off in 1932. He was again rehired in 1935, when he became a laborer in the casting shop where he worked until 1947, when he was transferred to the tube mill. In 1943, he had a bilateral herniorrhaphy. From 1945 on, this employee started to have symptoms of pulmonary and cardiac nature. He complained of difficulty in breathing and loss of weight. He was hospitalized in 1947 and 1948 for dyspnea due to cardiac failure. His chest x-rays showed marked bronchovascular markings and the lungs showed marked areas of haziness. The heart was hypertrophied. The x-ray diagnosis was sarcoidosis. The course in this man was gradually downhill until his death in 1948. Unfortunately no autopsy could be obtained in his case.

E.P., welder, age 34, has worked for the American Brass Company since 1939. He first worked in the finishing room, inspecting metal. By 1940, for two years, he became a loader, unloading copper and zinc from freight cars. From 1941, he has worked as a welder, welding cast iron and steel. The welding job took him all over the plant. In 1947, he was x-rayed during an acute episode of chills and fever. He was diagnosed then as a case of siderosis. He was taken off welding, and was given a light job as an outdoor man. His course was a slow one. He was studied at the Trudeau Foundation in 1950 and 1951. No definite diagnosis was established. Boeck's sarcoid, siderosis and pulmonary granulomatosis were discussed in the differential diagnosis. No final decision has been made in this case. His main symptom is exertional dyspnea. He was treated with Cortone and he improved considerably. He is now working on a light job in the foundry.

Comment

THE operation of beryllium casting was suspended by the company in 1946. Today, seven years later, in summarizing the cases, we find that the one case which was still alive at the time of presentation of Dr. Jackson's paper turned out to be not a case of beryllium poisoning, but one of silicosis. Since 1947, two definite and one doubtful cases of beryllium poisoning have been discovered. Of these—A.P. and J.A.—have died since. One has been proved by autopsy, and the diagnosis in the second one was confirmed by x-ray only. A third—E.P.— is still working, and the diagnosis is still under consideration.

The remarkable fact is that seven years later, no more than three further cases have been discovered. Fifty-five percent of the 300 employees in the casting shop area, which includes the scrap room and core room, have been x-rayed through company facilities. Although there has been little publicity in this group, physicians in the area were well aware of the occurrence of these cases of beryllium sarcoidosis. It can be assumed that a large percentage of the personnel originally exposed to beryllium and not x-rayed by the company would have had a chest x-ray within the last 11 years elsewhere. Each hospital admission at the two hospitals of the town has a chest x-ray, and the diagnostic unit of the State Tuberculosis Commission has been in town on surveys. Radiologists of the Commission and the two hospitals were well aware of the cases and would have discovered additional cases had they seen them.

Emotional Aspects of Rehabilitation

IT IS my opinion that there are no medical stumbling blocks in the rehabilitation of a patient other than those created by the patient's emotional problems. Where the disability has not produced a major emotional conflict, and where emotional pathology did not exist before the disability, patients will be rehabilitated, or, better, will rehabilitate themselves. The handicap in rehabilitation consists of how a person feels about being disabled, together with the emotional value in staying disabled. In the first place it alters the patient's concept of himself as a person—physical configuration, adequacy of performance. Certain types of disability—blindness, deafness, paraplegia, etc.—eliminate important previously acquired methods for meeting basic emotional needs through sublimation and other mechanisms or prevent their acquisition. This additional burden of inadequacy, real or neurotic, may be sufficient to create psychic pathology where none was apparent before.

—MAURICE GROSSMAN, M.D., in *Am. J. Psychiatry*, 109:849, 1953, quoted in *Am. Practitioner & Digest of Treatment*, September, 1953.

An Objective Appraisal of Periodic Health Examinations

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FOR MANY years the advisability and efficacy of periodic health examinations have been the subject of discussion at numerous medical meetings, more particularly, perhaps, among doctors interested in public health as well as among those who confine their interest to medicine as applied to industry.

I have been asked to make an objective appraisal of the situation as it exists at the present time. In doing so I shall first make a practical up-to-date definition of the term "periodic examination" and then discuss it in the following manner —purpose, scope, the common practices employed in carrying it out, and attitudes towards its future application.

THE periodic health examination, more logically expressed as the periodic "health inventory," embodies "far more than the routine clinical physical examination."[1] In the broad concept of a constructive health maintenance program, it implies a thorough and exhaustive evaluation of the total individual, tempered, however, with flexibility and individualization. The medical history includes not only the usual inquiries concerning personal and familial diseases but also occupational, social and neuropsychiatric information necessary for the practice of constructive medicine.[2]

Irrespective of the quality of the individual inventory, it is apparent, with rare exception, that the basic motive for such examination insofar as industry is concerned, has been for the protection of the employer. This statement is substantiated by the following quotation taken from the Brookings Institute Report entitled "Health Resources of the United States,"[3]—"The major objectives of the periodic physical examination are: (1) to assure that remediable defects disclosed by the pre-employment examination have been cured or alleviated; (2) to establish a means of finding conditions among employees which can impede safe operation and good production." Furthermore, in the appraisal of health services as applied to industry, this report goes on to state—"These programs may be appraised in terms of certain measurable results such as reduced rates of injuries and occupational disease, reduced compensation programs, decreased cost of production, and less tangible results such as their effect upon employer-employee relationships, absenteeism, and labor turnover, and the relations of the plant with the local community." Financial savings to employers have been well reviewed by Stern.[4]

This attitude of benefits for the employer is strikingly revealed when cognizance is taken of the fact that in many industrial establishments, examinations of any type are limited to employees in hazardous occupations, for those operating equipment involving the safety of others, in chronic absenteeism, and to executives in the higher brackets whose value is proportionately greater to the organization.[5,6,7,8]

No one could seriously question the value and need for emphasis upon these aspects in a health maintenance program. Likewise, there is no question but that the individual himself gains as a result of it. What does matter, however, is the fact that the individual as a person, a fellow human being, a potential patient or casualty, is considered secondary to his value as a worker.

Similarly as clinical medicine has focused its attention upon the curative aspects of disease, medicine as applied to industry has been geared in terms of cost to the employer, absenteeism, safety and compensation, and maintenance of production.

Stieglitz[9] in discussing the integration of clinical and social medicine, touched the core of the situation when he asked, "What about the individual? Is not his welfare the principal justification of all medical effort?"

As long ago as 1919,[10] the periodic medical examination as a measure of health maintenance was recognized and its possible extension to the general population was envisioned. In 1931 the American College of Surgeons[11] began an appraisal of industrial health services. College approval required, among other things, "preplacement and periodic physical examinations—to be made only by qualified medical examiners." The value of a healthy working population was forcibly brought to the nation's attention by the impact of two World Wars; this gave a marked impetus to the extension of health services in industry. Since the end of World War II the periodic health inventory has become an integral part of a constructive medical program.[12]

The scope of a health inventory varies widely

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among various organizations. Some are merely rapidly performed physical checks with little emphasis upon history and personal factors; these can hardly be classified under the term "health inventory." Others depend upon mass screening techniques, personal questionnaires and brief interviews. Still others may apply the public health service device of multiphasic screening processes. Franco[13] mentions the "dragnet" method based upon a wide scope of laboratory studies and the "personalized techniques," selecting certain laboratory studies as the result of a clinical opinion based upon a careful history and physical examination. These methods of evaluation place emphasis upon the physical examinations and laboratory methods of detection. All are after the fact. Little or no thought is given to the total individual in terms of constructive health maintenance.

THE concepts of the essential nature of health and disease are changing.[14] Hormones, enzymes, electrolytes, and other chemicals of the body are now being examined with the interest formerly reserved for anatomy, physical diagnosis and microscopy, giving us new ideas about common denominators in disease. It is becoming clearer that disease is not limited to an anatomical part—an organ, a tissue, or a system—but affects the entire organism.

A disease or symptom complex which, from all objective complaints, may be limited morphologically to a tissue, actually may affect not only the normal function of the entire organism but also may set into motion a subtle progression of reverberations psychologic, sociologic and economic, extending far beyond the sick patient. We are constantly reminded that a human being lives in equilibrium with his environment and that, in some degrees, he affects, and is affected by, all the conditions that surround him.

With acknowledgment of these facts as applied to a health maintenance program, it becomes a relatively easy task to outline the essentials of an ideal periodic health inventory.

It is imperative for every individual to know what his health is and to learn to live within the budget nature has given him. This issue can never be dodged. Meeting it head on—and the earlier the better—is the only approach to positive health.

When applied to industry it begins with the preplacement examination which goes far beyond the former so-called "pre-employment" examination. The new employee is considered from a total environment point of view, with the physical examination per se taking its rightful place in the medical analysis of the total individual. The next step is the performance of a comprehensive periodic inventory at suitable intervals as prescribed by the examining physician. This inventory includes the sociologic history of the individual, all emotional factors, his reaction to stress and strain, the character of his home life, and facts in relationship to his extracurricular activities; all of which, when coupled with the actual physical findings, give the examining physician all thoughts necessary for him to consider the employee from a total environmental point of view.[15]

For the prevention of iatrogenic diseases of all kinds, the employee must not be told to see the doctor and insist upon a yearly check-up unless the doctor specifically recommends it. Between periodic inventories the employee is encouraged to visit the Medical Department only when he is ill or in trouble. During the first 10 years of employment, if the above procedures are carried out, it is possible to make a total medical evaluation or a "profile" for each individual. This profile is of unlimited value in considering the future health and welfare of each employee. During this entire period the employee is scientifically schooled with respect to his own capacities and limitations.

To do this job well, the examining physician must be imbued with the importance of positive health in contradistinction to negative health. His primary concern must not be confined to the prevention or correction of disease. Instead, his efforts are towards the promotion of a healthier, happier and better-adjusted individual. He explains with simplicity and authority physiological changes compatible with the aging process. He considers minor conditions, for example alopecia, presbyopia, questionable elevations of blood pressure and the like, as slight deviations from the normal instead of early symptoms of impending disease.

By so doing he is considering the employee as an individual. The promotion of health in this fashion not only increases the employee's value as a worker but also as a total person who, in turn, should become a useful citizen in all aspects of community life.

The benefits to be derived from such a program of medical education, from an employee as well as an employer point of view, are in direct proportion to the effort expanded. The following profiles will substantiate this point of view.

CASE 1: A long-service employee started with the company as an office-boy. By attending night school he not only graduated but also worked for his master's degree in accounting. He married and began to raise a family. Salary adjustments were in keeping with his particular assignments. He was ambitious and cooperative almost to a fault. Without regard for his own personal physical or mental well-being, the innate urge to go forward and become successful led him to accept working assignments which required not only a full working day at the office but evening and Saturday work as well. Prior to a medical set-back, he frequented the Medical Department 374 times. These visits were always either before or after working hours or during the lunch hour period. His complaints were al-

ways minor. Routine physicals revealed nothing unusual. He was always in a hurry. His one object was to succeed, and his impression of how to accomplish this was to please his superiors. At long last, the big opportunity came—a position to head up a department and to become a director as well. And then what happened? Fear and consternation got the best of him and he suffered a complete physical and mental breakdown. Fortunately, he responded to prescribed therapy. A change in work assignment was obtained for him. A new pattern of life and work was decided upon at a time when something positive and constructive could be done about it. The problem now, however, is to handle this chap from a medical point of view so that he will not allow his natural aggressiveness to take him beyond his physical and mental ability to perform effectively and efficiently. Should he suffer another setback, it is quite probable he will be lost.

CASE 2: This individual was born and raised in the New York metropolitan area. After completing high school he worked for two years. He then decided on a teaching career and enrolled in a Teacher's College. His studies were interrupted by three years' Army service, after which he completed his work and ultimately received a master's degree in vocational guidance and occupational adjustment. He then accepted a teaching appointment in a private academy. However, the students were from wealthy families, indifferent to their studies, and he felt that they treated him like a servant. He felt that teaching had changed after the War, and, with the dissatisfaction from this position, decided to abandon that profession. He applied for several positions, and inasmuch as he had been recently married and needed a job, he accepted a position as a forecasting clerk. He continued in this for two years, although he gradually developed a dissatisfaction in his work which was reflected in lowered efficiency. Several attempts at transfer were unsuccessful and his discouragement progressed to the point where he was on the verge of resigning. Minor physical complaints developed which led to a periodic health inventory. On that examination physical findings were negligible. However, the discouragement was noted and an appointment was made with the Employee Relations people. Subsequently a transfer was negotiated to that department as a research assistant. He has remained in that position and has been quite pleased with the change. He finds the work interesting and his efficiency and morale have improved greatly. He is happily married, has one child, and apparently leads a modest home life. Most of his difficulties appear to have resulted from his indecision as to what type of career he should pursue. He now seems settled in this regard and apparently has found his niche. With a continued favorable environment he should do well. This case, in the opinion of the Medical Department, is a simple one of misassignment. The Personnel Department could well have prevented this set-back. A well-trained doctor with an inquiring mind detected the basic trouble at a time when something constructive could be, and was, done about it.

CASE 3: A 44-year old executive with 22 years' company service reported to the Medical Department for a routine periodic medical inventory. A profile was made. He was found to be in excellent health. A review of his previous medical history indicated that he had had only a minimum number of minor illnesses. His record showed that he had been in the habit of having periodic physical inventories. He was a very affable, composed and relaxed type of individual, and a review of his development was enlightening. He was born in a local town, attended public schools, and completed two and a half years of college. He married at this time and joined the company as a salesman. During his subsequent 22 years of service he had had progressive promotions in regular step-wise manner at approximately two- to three-year intervals. With each promotion he had accepted greater responsibility; he had been able to adapt readily to new duties, and had never developed symptoms related to decisions associated with his work. On the contrary, he had developed the habit of putting aside problems associated with his work when off duty, allowing time for outside interests and his private family life. In addition to devoting a reasonable amount of time to his wife and four children, he has acted as a counselor for Boy Scouts, has been an active member of several business and social clubs, and has allowed time for hunting and fishing. His dietary habits have been excellent. He uses tobacco and alcohol in moderation, and allows at least seven hours for sleep nightly.

In brief, this 44 year old executive has led a well integrated life. Admittedly he has been endowed with certain assets which he has progressively developed to their fullest extent. Of importance, however, is the fact that he has done so with a measure of restraint and a sense of proportion. As a result, he is healthy, happy and prosperous, and his chances for continued development in the company are excellent. I predict that one day he will reach the top.

It is apparent to me that periodic health inventories of the type described above should be available to all age groups of individuals. Many young people entering adulthood are burdened with anxiety, hostility, defensive attitudes towards themselves and others, feelings of guilt, inferiority, and other forms of self disparagement and self distrust. These symptoms, when coupled with an unsatisfactory working or home environment, may, if not clipped in their incipiency, develop into medical complaints beyond repair—the problem drinker[16] being a typical example. Such a positive health approach to the young will do much towards producing a happy, well-adjusted adult human being. Such a positive health con-

cept necessarily implies a high degree of cooperation with a paramedical staff. Where indicated, full use of medical and psychiatric social workers, psychologists, industrial hygienists, and public health agencies must be made.

There must be complete coordination of thought and action among all who are interested in individual health welfare. Insofar as industry is concerned, personnel people, employee counselors, training groups, and administrators of insurance, benefit and retirement plans must act as a team. Normal health and health maintenance must have a similar meaning to all. When all this comes about, the periodic inventory will assume a broad, positive and constructive place in all health maintenance programs.

Moreover, it may well point the way for a broader and more positive approach to our medical problems in the nation as a whole.

SUMMARY: The periodic health examination should be an individualized, thorough, and exhaustive evaluation of the total individual. Industry's basic motivation thus far for such examination has been the protection of the employer. The value of this examination to the employer has been proved by increased production and marked financial savings. The individual as a person has been considered secondary to his value as a worker.

The many types of health inventories done in the past have stressed the physical examination and laboratory methods of detection. In line with the concept that disease affects the entire organism, periodic examinations should also be concerned with the individual as a psychologic, sociologic, and economic being. The job of the examining physician should be the promotion of a healthier, happier, and better adjusted individual. Periodic health inventories and the formulation of a total medical evaluation or "profile" should be available to all age groups of individuals. For these examinations to be of maximum value to employer and employee, personnel people, employee counselors, training groups and administrators of insurance, benefit and retirement plans must act as a team. When all this comes about, a periodic inventory will assume a broad, positive and constructive place in all health maintenance programs.

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Handicapped?

PRIOR to the last war, many employers would not hire the handicapped because they felt such workers were accident-prone and less efficient. In studies made in 87 great industrial plants, it has been shown that the accident rate of the handicapped is lower than that of the able-bodied worker. It was also shown that the disabled produce at a slightly better rate than did the unimpaired performing on the same jobs. And it is a well recognized fact that nature makes compensation in the abilities of the handicapped worker. The loss of one of the senses often leads to the sharpening of the other senses; men without legs develop more capable hands; men who have no vision develop their sense of touch to the highest degree. For this reason, although in the past, industry as a whole has discriminated against hiring persons suffering from chronic illnesses and disabilities on the basis of false assumptions, the strongest supporters of their utilization are concerns, especially small ones, that have hired large numbers of such workers. It was demonstrated in World War II that the disabled compete successfully with their more fortunate fellow workers.

—From "Rehabilitation: The Third Phase of Medical Care," by HAROLD N. NEU, M.D., in *Nebraska State Med. J.*, September, 1953.

Trauma and Cardiac Complications

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MEDICALLY speaking trauma means any wound, whether slight or serious; the action of wounding; violence. However the courts have given it a different interpretation. They have looked upon an injury caused purely by stress or over-exertion as being traumatic in origin.

In recent years a great deal of attention has been paid to the subject of trauma and cardiac complications. The inter-relationship has been demonstrated clinically and confirmed at post-mortem examinations. Its significance is vital. The medical profession has given consideration to this problem and attention has been focused on non-penetrating injuries of the chest. Pathological conditions which were overlooked or entirely missed are now recognized.

In spite of this special interest there remain two schools of thought on this subject. One, led by Beck[1] and his associates, believes that, "the heart lying against the sternum is vulnerable to compression forces applied to the chest." This is especially true in children in whom the chest cage is easily compressed. The other school, led by Gonzales,[2] claims that "the heart is a compact, spindle mass of continuously moving muscle which lies in a soft yielding bed and is well protected by bones. Conditions are such that the heart cannot be reached by a crushing violence unless the force is exceptionally severe."

Judging from recent medical literature, it would seem that the Beck school of thought is the more popular. A number of cases of cardiac injuries have been reported, instances of non-penetrating wounds of the chest. Spicer[3] has offered the following classification for traumatic heart disease:

(a) Penetrating injury: (1) Fatal. (2) Non-fatal complications.

(b) Non-penetrating injuries: (1) Injury to the pericardium. (2) Acute pericarditis. (3) Chronic pericarditis.

(c) Injury to the heart muscle: (1) Rupture. (2) Contusion.

(d) Injury to the heart valves (endocarditis).

(e) Injury to the aorta: (1) Rupture. (2) Aneurysm.

f) Extra systolic arrhythmia (irregularities): (1) Auricular fibrillation. (2) Auricular flutter. (3) Heart block. (4) Bradycardia.

(g) Myocarditis.

(h) Coronary artery disease.

(i) Angina pectoris.

(j) Heart strain.

According to Brahdy and Kahn,[4] trauma can cause or aggravate a circulatory condition in the following ways:

1. By mechanical effect on the heart.
2. By an unusual strain.
3. By such factors as excitement or precipitation by a certain incident.
4. By mechanical effect, such as ruptured valve.
5. By stimulation of a dormant inflammation, most common cause of which is rheumatic endocarditis or pericarditis.
6. By disorder of the function of the heart; mechanical injury may precipitate sudden death in an already damaged heart or it may cause congestive failure.

Time will not permit the discussion of all types of non-penetrating injuries of the heart. Something should be said of the two most important and common ones: Injury to the muscle or contusion of the heart; and coronary artery disease, the latter most common in industry today.

Contusion of the heart occurs more frequently than is commonly supposed. It may be, and it is often, overlooked. Sigler,[5] in his study of the incidence of trauma of the heart, reported 42 cases associated with rather serious accidental injury to the body. In 76.2% of these cases he found demonstrable evidence of cardiac damage clinically, electrocardiographically, or both. In some cases the damage occurred even when the blow did not affect the chest but there was marked bodily injury elsewhere.

One of the most common causes of contusion of the heart occurs in what is referred to as the

Fig. 1.

The heart is compressed between the vertebrae posteriorly and the sternum anteriorly. This form of accident is not uncommon and may be referred to as the steering wheel injury.

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steering wheel injury, the mechanics of which are illustrated in Fig. 1, according to Beck. As examples I will cite two cases reported by Burstein and Marshak.[6]

The first is that of a white male, age 37. While driving, he lost control of his car and ran into an object, the nature of which was unknown. The steering wheel was jammed into his left chest. There was no state of unconsciousness. When admitted to the hospital his chief complaint was severe pain in the chest, aggravated by respiration. Examination revealed mild shock with moderate cyanosis and dyspnea. Pulse rate was 100, but of fair quality. There was bloody discharge from both nostrils and multiple lacerations about the nose. There was distinct compression deformity about the lower aspect of the chest with abrasion of the skin. The heart sounds were of fair quality with a systolic murmur at the apex. Blood pressure was 60/40. X-rays of the chest revealed evidence of fractures of the left 4th, 5th, and 6th ribs along the mid-axillary line. The day after admission a suggestive friction rub was heard over the apex. This was transient. Diagnosis of contusion of the heart was made, and the patient was treated with bed rest for six weeks. Five days after his injury a loud systolic murmur was heard at the apex with a suggestion of a presystolic murmur. It was thought that the patient probably had a rheumatic involvement of the heart, despite lack of previous history. An electrocardiogram taken on the day of his admission revealed evidence of myocardial damage. Further electrocardiograms taken four days later revealed progression of the damage. Then a tracing taken 18 days later revealed some improvement. Tracing 40 days later revealed complete electrocardiographic recovery.

The second case is that of a white male, age 32, admitted to the hospital November 22, 1938. He stated that when his car had collided with another car he immediately experienced excruciating pain over the sternum. On admission, he was drowsy and had an alcoholic odor on his breath. During the period of observation he was unable to remember the accident, and his only complaint was severe pain over the sternum at the level of the 4th and 5th ribs, worse on respiration. When admitted to the hospital he was in a semiconscious state, but soon regained complete consciousness. Blood pressure was 120/70. Examination was negative except for the severe pain over his sternum, with contusion of the same area. A diagnosis at that time was made of craniocerebral trauma, contusion of the sternum, possible contusion of the heart, possible fracture of the 4th, 5th, and 6th left chest ribs. The chest pain continued for five days. X-ray of the chest revealed displacement of the xiphoid cartilage of the sternum, but there was no evidence of fracture. Electrocardiogram showed definite changes confirming the diagnosis of contusion of the heart. Temperature was normal for the first three days, then it rose to 100° F.

In contradistinction to the first case, the second patient had no cardiac symptoms which indicated heart trauma, but the electrocardiogram revealed evidence of myocardial changes undoubtedly due to definite heart damage. The electrocardiogram taken five days later showed improvement. Another tracing taken 13 days later revealed persistent positive electrocardiographic changes. The second tracing compared with the first showed some improvement. The early electrocardiographic improvement indicates that the damage was of traumatic origin. In the first case the clinical findings of contusion of the heart were substantiated by the electrocardiographic findings. In the second case the electrocardiogram alone was diagnostic. These two cases illustrate the importance of electrocardiographic study in chest injury.

The next two cases, from my files, illustrate cardiac injury, arising out of employment, caused by non-penetrating injury to the chest.

The first case: E. A.; age 41; white male; occupation, truck driver for a lumber company. On March 2, 1950, while he was rolling a load of lumber off a truck, using a crowbar to pry the rollers, the bar slipped from his hand and he struck his chest against the roller with quite an impact. He immediately experienced pain across his chest, and his breath was shut off for a few seconds. He rested for a few minutes, but when he resumed his work the pain in his chest was severe. He prespired profusely and had difficulty in breathing. Though he was able to drive his truck back to his place of employment, he had to stop several times because of the discomfort in his arms and chest. The pain persisted for three days, but he did not seek medical attention because he thought it due to his bruised chest. Then on the fourth day, as he was not getting better and the pain became more severe, he consulted a physician, who examined him and told him that he had had a heart attack. This was confirmed by electrocardiographic findings.

On behalf of the insurance carrier, I examined this patient on April 6, 1950, to determine causal relationship, if any, between his occupation and his illness. The examination confirmed the diagnosis of acute coronary thrombosis with anterior myocardial infarction. My opinion was that there was direct causal relationship between his work and his illness.

I have followed this patient for a period of more than a year and I have been impressed by the electrocardiographic improvement. The tracings have almost returned to the normal pattern, which is rather unusual in a person of his age group. This led me to change my opinion that this patient had suffered from a coronary thrombosis at the time of his accident, and to conclude that he had had contusion of the heart. The claim was accepted by the insurance carrier and compensation was paid. A compromise and release settlement has been submitted to the Industrial Accident Commission for its consideration.

The second case: J. A.; age 56; white male; occupation, oil field mechanic. On December 11, 1948, this man was fitting a motor to a power pump. The motor weighed about 3,000 pounds, and had to be displaced three-eighths of an inch before it could be set. He attempted to displace the motor with a crowbar, which he put under the motor to pry it by standing on the end of the crowbar with both feet and holding onto the motor with one hand. While he was springing, the bar slipped from under his feet causing him to fall forward a distance of three feet. As he fell he struck his chest on the guard of a gear box. The blow to his chest knocked out his breath for several minutes. After resting about 10 minutes he resumed his work and by the same procedure managed to displace and set the motor.

While he was working he experienced pain across the upper part of his chest, which he thought was due to strained muscles, and kept on working. The pain increased in intensity; he became nauseated and vomited. He was taken immediately to a doctor, who told him that he had had a heart attack. The diagnosis was confirmed by electrocardiographic studies.

I examined this patient on behalf of the insurance carrier on July 26, 1949. The electrocardiogram at that time still revealed evidence of myocardial damage suggestive of coronary artery disease and anterior myocardial infarction. I have examined him periodically since and observed marked improvement in the electrocardiogram. The last tracing taken about a month ago showed almost normal pattern. This, in my opinion, is sufficient evidence to establish that this patient suffered from cardiac contusion at the time of his accident. The x-ray study of his chest at the time of his accident revealed no fracture. Compensation was paid.

Case 3: Late in the afternoon of December 24, 1951, a 43 year old truck driver, under the influence of liquor, walked into the Cedars of Lebanon Hospital complaining of pain in his chest, and asked to be admitted. He stated that he had hurt his chest when he fell on the end of a short crowbar while using it to move a heavy object in the bed of his truck. He was admitted to the service of an outstanding cardiologist. The examination did not reveal any evidence of bruise on his chest; however, he had the clinical manifestations of coronary artery disease, and he was kept under observation.

The first electrocardiographic study revealed only a slight abnormality. The second and third, taken at 48- and 72-hour intervals, revealed progressive changes of myocardial damage. The attending physician, believing the man's history to be true, made a diagnosis of cardiac contusion, as described by Boas, and notified the employer, who, in turn, reported the claim to its compensation insurance carrier.

Twelve days after the alleged accident I examined this patient for the compensation carrier. I saw him late in the afternoon, and spent more time with him taking the history than I had alloted myself. The facts were vague, which led me to question the history. I completed the physical examination, and as I was preparing to do an electrocardiogram the nurse walked in with the patient's dinner tray. I postponed the electrocardiographic examination until the following morning. The next day when I reached the floor of the hospital the nurse informed me that the patient had expired suddenly some five minutes previously. He had dropped dead on his way from the bathroom to his bed.

I immediately contacted his attending physician, who was not too familiar with compensation claims, and informed him that because of the alleged injury and the diagnosis of contusion of the heart, he should notify the coroner; that the signing of the death certificate was under the jurisdiction of the coroner. This was done, and a postmortem examination was made, which I witnessed with the attending physician.

The examination revealed no evidence of trauma to the chest or to the heart. It revealed that the death was due to advanced coronary artery atherosclerosis and that there was complete occlusion of the anterior descending branch of the coronary artery by a large atherosclerotic plaque.

The disease process had progressed to the point where there occurred occlusion on the morning of his death, and, the circulation of his heart muscle not being adequate, his death was precipitated—a demise that was considered not industrial.

I report this case because it illustrates several points:

1. That the patient never suffered the alleged injury to his chest, as there was no evidence of bruises on the chest at the time of his admission or during his stay in the hospital. Neither were there any signs of hemorrhage in the deep tissue of the chest at the time of the postmortem examination.

2. That the attending physician was misled by the patient's history and the progressive electrocardiographic findings in making a diagnosis of cardiac contusion.

3. That postmortem examination is important. In this case the evidence obtained substantiated the denial of the claim by the insurance company. I am sure that had no postmortem examination been made, a claim would have been filed with the Industrial Accident Commission, and the widow would probably have received some sort of award.

Coronary Artery Disease

THE present broad and liberal compensation laws provide that if a disease is caused, aggravated, or precipitated by a specific incident arising out of or during the course of employment, an award should be made. Because of the broad interpretation of the law, the incidence of acute coronary thrombosis and myocardial in-

farction in workers occurring in the course of their employment has created a social as well as an economic problem. At present no accurate statistics are available as to the frequency of non-fatal cardiac lesions associated with non-penetrating injuries to the chest, but they certainly are not rare.

Stress or overstrain is often connected with accidents, and at times it is difficult to separate the effect of the stress or strain from the effect of direct trauma. Whenever in a given case there is trauma, the medical examiner must investigate and appraise its importance without prejudice. If a condition is aggravated, if further damage is precipitated by stress, strain or over-exertion in the course of employment, and if direct causal relationship is proved, the employer is responsible for the disability that follows.

Boas,[8] a student in this field, states: "The syndrome of coronary occlusion may be induced by a non-penetrating injury to the chest or by unusual effort, and the same cause may initiate the syndrome of angina pectoris. It has been indicated that the occurrence of coronary thrombosis or the syndrome of angina pectoris after unusual effort gives presumptive evidence of antecedent sclerosis of the coronary arteries. Such arteriosclerotic lesions may give rise to no symptoms and to no cardiac disturbances; they may be nothing but evidence of normal aging. From the point of view of the law the patient is not diseased nor has he clinical disease. When an unusual strain during work is followed by cardiac disability in the sense outlined, and when this occurs in a person who has been previously well and free from symptoms while at work, it is proper to conclude that the disability was induced by the work and it is compensable."

In dealing with an industrial cardiac problem one must make a thorough study of all the facts involved. A detailed history should be obtained from the applicant; and the report of the investigation should be thoroughly studied before a final opinion is given. A great number of claims for cardiac disability are made. Some are accepted, others are denied, by the insurance carrier. The acceptance or denial is based often on the opinion given by the medical consultant. Hence that opinion should be given without prejudice and with a thorough knowledge of the facts. The examiner should be able to substantiate his opinion in court if called upon to do so.

Cases in which Liability was Accepted

1. E. P.; white male; age 42; weight 150; occupation, co-partner of business. Usual work, running of office and acting as salesman. On December 16, 1949, he helped to stack 20 to 30 cases, each weighing 50 to 60 pounds. After that, for a half hour he worked at a heavy cutting table rolling and lifting a heavy cutter. While so engaged he experienced sudden fatigue and loss of strength in both arms. This was followed by a severe pain across the upper part of the chest. He stopped work immediately. After resting, he drove his car to his home, a distance of three miles. During the trip he had to stop several times because of severe pain in his chest. As soon as he got home a physician was called. A diagnosis was made of acute coronary occlusion. Electrocardiographic studies later confirmed this diagnosis.

After studying this case, I gave the opinion that there was direct causal relationship between his illness and his occupation.

2. J. H.; white male; age 57; occupation, salesman. On November 6, 1950, he put his car in a parking lot alongside another car. He opened the left door and set his foot on the ground to get out. As he did this the car parked immediately to his left started to back up, struck the door of his car, and squeezed his left leg between the door and the running board. As soon as the tension on the door was released and he could move his leg, he fell backward on the seat, lay there in intense pain, became very dizzy, and experienced pain across the upper part of his chest. After resting a half hour he proceeded to drive his car to his home, a distance of some 15 miles. That evening he noticed that his leg was swollen and discolored. Between 5:00 and 6:00 o'clock the following morning he was awakened by severe excruciating pain across the upper part of his chest. The pain radiated to his left shoulder and down his left arm. He broke out in profuse perspiration, became nauseated, and vomited. A doctor was called immediately, and a diagnosis of acute coronary occlusion was made. The electrocardiographic studies made on the same day revealed evidence of acute coronary occlusion with anterior myocardial infarction.

I examined this man on November 28, 1950, and gave the opinion that there was direct causal relationship between his illness and his occupation.

3. W. H. E.; white male; age 45; occupation, electrician. In March, 1947, he climbed a ladder to the top of a water tower 200 feet high, carrying 30 pounds of tools attached to himself. When he was half way up the ladder he started to feel a sensation of constriction in his chest, and his body felt very heavy. He continued climbing, and when he reached the top he had severe pain in both shoulders and arms, perspired profusely, and had difficulty in breathing. After he had rested for 20 to 30 minutes, the pain eased up and he climbed down. After another 10 minutes the pain and discomfort had disappeared. He continued with his work in his shop for two hours, and then he had to climb the ladder to the tower again, and this time the symptoms, (pain and shortness of breath) recurred after he had gone approximately 50 feet. That night after he went home he had no appetite, went to bed early, and had a restless night. The following day he worked four hours and rested the remainder of the day. During the following night he woke up around 4:00 A.M. with severe

pain in his chest. A doctor who called made a diagnosis of acute coronary thrombosis which was confirmed by electrocardiogram.

I examined this man two months later on behalf of the insurance carrier for an opinion as to the relationship between his illness and his employment. I gave the opinion that the man had suffered an acute attack of coronary occlusion with myocardial infarction in the course of his employment, and that the climbing of the 200-foot ladder in the course of his occupation was a direct and precipitating factor. Compensation was paid.

Cases in which Liability was Denied

1. J. C.; male; age 43; occupation, presser. In 1941, one Sunday while in church, he experienced a sudden constricting knife-like pain in his chest, accompanied by shortness of breath and profuse perspiration. This pain lasted 20 to 30 minutes. It was referred to both shoulders and straight through to his back. At that time he did not consult a physician but remained in bed a couple of days. After that he had some distress and pain in his chest on exertion. On August 5, 1949, while at work standing at a pressing machine he suddenly felt pain in his chest and shoulders, perspired profusely, and had difficulty in getting his breath. He quit his work, went home, and remained in bed for two days, but the pain persisted. He consulted a doctor, who treated him with bed rest for three weeks. On October 3, 1949, he resumed his former occupation for two weeks but he had to stop work because of pain in his chest and difficulty in breathing.

At the time of examination he gave a history that his chest hurt all the time, but seemed to be worse late in the evening and in the early hours of the morning. At times he woke up with a choking sensation and had to get out of bed. These attacks lasted from 15 to 20 minutes.

Examination revealed that this man was suffering from coronary artery disease and posterior myocardial infarction of long duration, and that there was moderate enlargement of the heart to the left. He was examined on behalf of the insurance carrier on November 7, 1949. He had the clinical manifestations of acute coronary disease with myocardial infarction in 1941, and ever since has had symptoms of anginal syndrome. On October 5, 1949, he had a severe attack which caused him to lay off work and seek medical care. Taking into consideration the past and present history of his illness, as well as his occupational history, I was of the opinion that his work did not cause or precipitate these attacks and did not aggravate the previous condition. There was no incidence of stress or strain or physical exertion associated with his occupation. Claim denied and the carrier was upheld by a take-nothing award by the Industrial Accident Commission.

2. J. L.; age 63; occupation, machinist. On October 26, 1949, while he was operating a drill press, the material he was working with slipped from his hand. As he grabbed for it he hit his hand against the drill and sustained a cut about an inch and a half long on the anterior surface of his right hand. The cut bled profusely, but at the time he did not suffer any unusual discomfort. He immediately reported to a doctor, who gave him an injection of antitoxin. The wound healed by first intention. On November 1, 1949, at about 8:30 A.M. he felt a peculiar sensation in his chest and realized that something was not right. He had no definite pain, but was nauseated and short of breath. When this occurred he was at work, having gone down to a warehouse with another man to get some lumber. Together they handled some 30 pieces of 1 x 6 lumber, loading it into a truck. It was just after they had started to go back to the shop that the symptoms appeared. The sick feeling persisting, the man reported to his doctor, who in the course of the examination made an electrocardiogram, and on its findings had him taken to the hospital immediately. The medical history revealed that in 1941 he had been confined to the hospital for a heart attack, and that ever since he had had intermittent symptoms of anginal syndrome.

This man was examined on November 2, 1949, on behalf of the insurance company. The opinion was given that the work performed by the applicant in the course of his employment did not entail any physical activity, certainly not the work that he performed on November 1, 1949. Therefore it did not cause any aggravation of the pre-existing condition. Also that there was no relationship between the injury he suffered to his hand on October 26, 1949, and the heart attack for which he was hospitalized on November 1, 1949. It was also stated that it is well-known that patients who have suffered an acute attack of coronary occlusion in the past are candidates for other attacks at any time without any incident of stress or strain. The claim was denied and no compensation paid.

3. H. L.; white male, age 53; occupation, shoe store manager. On October 24, 1949, while stacking boxes on a shelf at arm's length he suddenly experienced sharp pain in the chest and had difficulty in breathing. Stopping work immediately he went to the back room, sat down a few minutes, and became sick at his stomach. After 10 to 15 minutes the pain eased, and he walked a block and a half to a doctor's office. Upon arriving there he was "all in." After an examination he was sent to a hospital, where a diagnosis of acute coronary thrombosis with posterior myocardial infarction was made. After bed rest for three to four weeks he made a good recovery.

I examined this patient on behalf of the insurance carrier on January 15, 1950, and gave the opinion that he had suffered from acute coronary thrombosis with posterior myocardial infarction on October 24, 1949, and that there was no causal relationship between his illness and his occupation, as there was no incident of unusual stress

or strain that preceded the clinical manifestations of his attack. Claim was denied.

Summary

1. HEART complications do arise out of, or are caused or precipitated by, non-penetrating injury to the chest.

2. Contusion of the heart is a common complication of steering wheel accidents. It is caused by compression of the chest.

3. Electrocardiographic studies should be made whenever there is a history of injury to the chest; also in automobile accidents when there are serious body injuries.

4. Acute coronary occlusion with myocardial infarction does arise in the course of employment.

5. The final determination of the case is often based on the opinion of the consultant cardiologist.

6. Whenever there is no incident of stress, strain, or over-exertion, a claim is likely to be denied. Whenever the incident of stress, strain or over-exertion precedes the clinical manifestation of the symptoms by several hours or days, the claim is also likely to be denied.

7. When the applicant experiences an incident of unusual stress or strain, and is aware of clinical manifestation of symptoms during, or immediately after, such incident, there is definite causal relationship between his occupation and his disability.

8. It is the general belief that there must be pre-existing disease or damage to the coronary artery before an occlusion or a thrombosis can develop in that artery.

9. The potential, as well as the real liability should be appraised early in any given case.

(2007 Wilshire Blvd.)

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The Economics of Rehabilitation

WHEN the physical standards for the use of men in industry were drawn up at the beginning of this century, they were influenced by the "anatomical" concept of medicine. Competence was measured in terms of anatomical perfection. A man could do the whole job or none of it; he was disabled for all work if he was disabled for any part of it. With the development of the "functional" concept, specialization, and subdivision of jobs, the "perfect anatomical specimen" concept was no longer valid in determining suitability for employment. Thus, through World War II, and the changes which took place in industry itself, men came to realize the great possibilities of rehabilitation; but for the most part men still fail to see that the rehabilitation of the severely handicapped is no less valuable economically to the community than the rehabilitation of the less severely handicapped. To teach a helpless person self care releases others and saves costly care of the individual in an institution or hospital; to teach a severely handicapped person how to do some work adds to the potential wealth of the community. Furthermore, no degree of economic gain can measure the value of society in the transformation of an individual from a dependent to a productive, self-reliant person; but, by adequate rehabilitation, industry saves pensions, labor saves valuable men, government has more taxpayers, and our relief rolls are reduced. In the perilous times in which we live, confronted by a foe whose massed strength is superior to ours, American industry will have to rely more and more on the untapped sources of manpower which rehabilitation can furnish.

—From "Rehabilitation: The Third Phase of Medical Care," by HAROLD N. NEU, M.D., in *Nebraska State Med. J.*, September, 1953.

An Aid to Accident Prevention

MEDICAL PROFILE CLASSIFICATION OF BUS OPERATORS

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THE HUMAN factor is one of the most important in accident prevention. This is especially true in bus transportation where the lives of so many are dependent on the physical and mental well being of the bus operator. In a previous report[1] we have shown how the establishment of a comprehensive medical program in the Third Avenue Transit System resulted in a 50% reduction in accidents.

In an effort to evaluate those physical and mental factors responsible for accidents in the transportation industry, a Profile system, similar to that established by the United States Air Force in evaluating pilot candidates,[2] was evolved. Periodic, as well as pre-employment examinations, are evaluated according to the Profile classification.

The Profile can be seen in Chart I. It includes a physical and mental examination, as well as certain motorability, psychophysical, and psychological tests. It is divided into six categories: P. O. H. E. N. D. Each category is subdivided into four classifications: (1) representing the highest, and (4) the lowest grade in each category. A grade 4 in any group disqualifies a candidate.

P represents the general physical capacity or stamina of the candidate. The factors considered are age, build, strength, stamina, height, weight, agility, energy, muscular coordination, and function. This class is sub-divided as follows:

1. Able to perform maximum sustained effort over extremely long periods.
2. Able to perform sustained effort over long periods.
3. Able to perform sustained effort for moderate periods.
4. Below minimum standards for employment.

O represents the organic group. A list of all organic defects and their numerical classification has been prepared, but is too lengthy to present. This list is based on the Army and Air Force criteria.[2]

Examples of our method of classification of this group follow:

Obviously, any organic condition that might suddenly incapacitate an operator is placed in Class 4.

There are certain minor conditions that are classified 4 because of the nature of the bus operator's work. These include pilonidal cyst and severe hemorrhoids, which of themselves may be insignificant, but because the operator must sit for long periods of time these conditions interfere with his work.

Some diseases are classified in all four grades depending upon the severity. Diabetes which is mild and controlled without insulin is acceptable and is classified 1 or 2. However, when insulin is required, diabetes is classified 4 because of the possibility of insulin shock.

Acute bronchitis, on recovery, with no disqualifying sequelae, is classified 1 or 2. Mild chronic bronchitis which is remediable by therapy is classified 3. Chronic bronchitis, more than mild, or if mild and not responding to therapy, is classified 4.

Rheumatic fever may be classified 3 if there is a history of a single attack more than two years preceding, without recurrence and without cardiac damage. Otherwise it is classified 4.

Certain orthopedic problems such as scoliosis, kyphosis, or lordosis, can vary from Grade 1 to 4 depending on the severity.

The absence of a fifth finger which would not incapacitate a candidate is classified as 2, while the absence of a thumb would be classified 4.

H classifies the hearing defects and aural pathology. The factors considered under this group are auditory acuity and organic defects of the ears. These are subdivided as follows:

1. Auditory Acuity: soft whisper audible in each ear at two feet.

Audiometric: 0-20 decibels loss. Organic defects: none.

2. Auditory Acuity: Loud whisper audible in each ear at two feet.

Audiometric: 25-35 decibel loss. Organic defects: no active or progressive organic disease.

3. Auditory Acuity: normal spoken voice audible in each ear at two feet.

Audiometric: 40-50 decibel loss. Organic: acute non-progressive organic disease.

4. Auditory Acuity: loud voice audible in each ear at two feet.

Audiometric: above 50 decibel loss.

Organic Defects: A. Acute or chronic supperative otitis media.
B. Perforation of membrana tympani.
C. Severe fungus or other severe chronic infection of

CHART I.
THIRD AVENUE TRANSIT SYSTEM
MEDICAL DEPARTMENT
PROFILE CLASSIFICATION

Profile Class	—P— Physical Defects or Stamina	—O— Organic Defects	—H— Hearing—Ears	—E— Vision—Eyes	—N— Neuropsychiatric	—D— Motorability
1.	Able to perform maximum sustained effort over extremely long periods.	SEE	Auditory acuity: soft whisper audible each ear at two feet. Audiometric: 0-20-decibels loss. Organic defect: none.	Visual acuity: 20/20 in each eye uncorrected. Organic defect: none.	No psychiatric disorder.	91—100
2.	Able to perform sustained effort over long periods.	DETAILED LIST	Auditory acuity: loud whisper audible each ear at two feet. Audiometric: 25-35 decible loss. Organic defect: no active or progressive disease.	Visual acuity: 20/40 correctible to 20/30 in each eye. 20/100 in one eye correctible to 20/30. (Provided defective vision is not due to active or progressive organic disease.) Organic defects: Mild superficial infection of lids.	Mild transient psychoneurotic reaction. Mild character and behavior disorders. Borderline mental deficiency.	71—90
3.	Able to perform sustained effort for moderate periods.	OF ORGANIC	Auditory acuity: normal spoken voice audible each ear at two feet. Audiometric: 40-50 decible loss. Organic defect: acute non-progressive organic disease.	Visual acuity: 20/40 not correctible. 20/100 in one eye plus 20/50 in other, both eyes correctible to 20/40. (Provided defective vision is not due to active or progressive organic disease.) Organic defect: Astigmatism or muscle imbalance correctible.	Mild chronic psychoneuroses. Moderate transient psychoneurotic reaction. Mental deficiency, mild degree.	65—70
4.	Below minimum standards for employment.	DEFECTS.	Auditory acuity: loud voice audible each ear at two feet. Audiometric: above 50 decible loss. Organic defect: Acute or chronic suppurative otitis media. Peforation of membrana tympani. Severe fungus or other severe chronic infection of the external auditory canal. Chronic Mastoiditis.	Visual acuity: below above standards. Organic defect: Any severe active or chronic progressive disease of the eye. Marked muscle imbalance and/or astigmatism. Marked nystagmus. Diplopia. Impaired depth perception, glare resistance or peripheral vision. Severe color blindness.	Psychosis. Moderate severe chronic psychoneuroses. Severe transient psychoneuroses (Situational). Marked degrees of character and behavior disorders. Marked mental deficiency.	Less Than 65
FACTORS TO BE CONSIDERED	Age, build, strength, stamina, height, weight, agility, energy, muscular coordination and functions.	Severity in relation to job.	Auditory acuity and organic defects of the ears.	Visual acuity, and organic defects of the eyes and lids. Special vision tests: Telebinocular Depth perception Glare resistance Peripheral vision Color blind tests—Ishihari	Type, severity, and duration of the psychiatric symptoms of disorder existing at the time the profile is determined. Amount of external precipitating stress. Predisposition as determined by the basic personality makeup, intelligence, performance, and history of past psychiatric disorders. Impairment of functional capacity. Psychological tests.	American Transit Association Motorability Test

Profile Rating

Date	P Physical Capacity	O Organic Defects	H Hearing	E Vision	N Neuropsychiatric	D Motorability	Classification Excellent; Good; Fair; Poor.

the external auditory canal.
D. Chronic Mastoiditis.

E. Under E the visual and ocular defects are classified, and the factors considered under this group are the visual acuity, and the organic defects of the eyes and lids. Special vision tests, (i.e., telebinocular, depth perception, glare resistance, peripheral vision, and the Ishihari Color Blind Test) are done to aid this evaluation.

The group is subdivided as follows:

1. Visual Acuity: 20/20 in each eye uncorrected. No organic disease of the eyes.

2. (A) Visual Acuity: 20/40 correctible to 20/30 in each eye. 20/100 in one eye correctible to 20/20 (provided the defective vision is not due to active or progressive organic disease). (B) Mild superficial infection of the lids.

3. (A) Visual Acuity: 20/40 not correctible. 20/100 in one eye plus 20/40 in other eye, correctible to 20/40 (provided the defective vision is not due to active or progressive disease). (B) Astigmatism or muscle imbalance correctible.

4. (A) Visual Acuity: Below above standards.
(B) Any severe active or chronic progressive disease of the eye.
(C) Marked muscle imbalance and/or astigmatism.
(D) Marked nystagmus.
(E) Diplopia.
(F) Impaired depth perception, glare resistance, peripheral vision, or color blindness.

N. Under N the neuropsychiatric conditions are graded. The factors considered in the evaluation of this group are:

(A) Type, severity, and duration of the psychiatric symptoms or disorder existing at the time the profile is determined.

(B) The amount of external precipitating stress.

(C) Predisposition as determined by the basic personality makeup, intelligence performance, and history of past psychiatric disorders.

(D) Impairment of functional capacity.

(E) Psychological tests.

The Group is subdivided as follows:

1. No psychiatric disorder.

2. Mild transient psychoneurosis reaction. Mild character and behavior disorders. Borderline mental deficiency.

3. Mild chronic psychoneurosis. Moderate transient psychoneurotic reaction. Mental deficiency, mild degree.

4. Psychosis. Moderate severe chronic psychoneuroses. Severe transient psychoneuroses. (Situational.) Marked degrees of character and behavior disorders. Marked mental deficiency.

D is the classification of the motorability driver tests. The factors considered in this group are those of the American Transit Association Motorability Test. The grade depends on the score obtained in this test:

1. 91-100
2. 71-90
3. 65-70
4. Less than 65.

Results

IN 1948 our company changed from trolley to bus operation, and all candidates for the position of bus operator were required to have a complete physical examination. Four hundred and two men were examined. Of this number 30 were found physically unqualified for the new type of work; two were pensioned, and 28 were given non-driving work.

In addition to the 30 disqualified candidates, 12 others were considered medically unfit to drive

CHART II.
PROFILE SUMMARY OF CANDIDATES NOT MEDICALLY QUALIFIED FOR BUS OPERATORS

No.	Name	Diagnosis	Date Examined	Profile P	O	H	E	N	D	Comments
1.	T.M.	Hypertensive vascular disease; Rheumatoid arthritis; Diabetes mellitus; Obesity.	4/16/48	3	4	1	2	2		Weight 240; Height 78 inches. Still driving.
2.	W.C.	Hypertensive vascular disease; Generalized arteriosclerosis.	4/16/48	3	4	1	3	1		Worked two years. Died 4/21/51.
3.	F.M.	Marked mental deficiency; Generalized arteriosclerosis.	4/12/48	3	3	1	2	4		Worked as a bus operator two months and then requested transfer to job as porter.
4.	C.A.	Mild chronic psychoneurosis; Obesity.	5/12/48	2	4	1	1	3		Still driving.
5.	F.L.	Hypertensive vascular disease; Diabetes mellitus; Obesity.	5/3/48	3	4	1	1	2		Weight 261. Worked 21 months. Died March 5, following appendectomy.
6.	C.K.	Hypertensive vascular disease; Left inguinal hernia.	5/11/48	3	4	1	3	2		Blood pressure 210/120. Still driving.
7.	R.N.	Chronic diverticulitis; Recurrent hepatitis; Bilateral varicosities.	5/10/48	3	4	1	2	1		Drove bus for 10 months and then requested change to non-driving job.
8.	W.L.	Peptic ulcer; Umbilical hernia; Marked mental deficiency.	6/23/48	1	4	1	2	4		Still driving
9.	W.McG.	Anxiety neurosis, moderate, severe, chronic.	4/16/48	2	1	1	1	4		Drove three years and voluntarily went out of service.
10.	P.C.	Hypertensive vascular disease; obesity; marked varicosities.	5/26/48	4	3	1	2	1		Drove seven months. Retired January, 1949.

CHART III.
ACCIDENT DATA OF BUS OPERATORS WITH UNSATISFACTORY PROFILE CLASSIFICATION
NUMBER OF ACCIDENTS IN EACH YEAR OF DRIVING

	1st Year Driving	2nd Year Driving	3rd Year Driving	4th Year Driving
T.McG.	3	0	0	0
T.M.	3	7	0	0
F.M.	3	—	—	—
C.A.	2	2	1	2
F.L.	6	2	—	—
C.K.	3	6	3	3
R.N.	4	—	—	—
W.L.	0	1	4	2
T.McG.	1	8	4	—
P.C.	5	—	—	—
Total No. Accidents	30	26	12	7=75
Total Time in Months	102	81	72	48=303

Calculations—
Unsatisfactory Profile Group: 75 accidents / 303 months or 75 accidents / 25.25 years = 2.97 accidents per man, per year

Control Group: 60 Operators With Satisfactory Profile (Same Period of Time and Routes as Study Group): 473 accidents / 288 years = 2.07 accidents per man, per year

a bus. For the welfare of the company and the improvement of labor-management relations, these 12 were granted permission to drive. Two of the 12 heeded the advice of the Medical Department and accepted other jobs. The other 10 became bus operators.

Recently we classified the records of these examinations according to our newly established profile system, and all were found unsatisfactory.

The diagnosis and profile ratings of the 10 bus operators are shown in Chart II. All were classified 4 under some category. As can be seen from the chart most of these patients had more than one organic disease, and the grading under O was obtained by evaluating the total organic defects. Motorability tests were not performed at the time of these examinations, and therefore there is no grading under D.

The Accident Rate

THE accident rate of these 10 medically unqualified operators can be seen in Chart III. The number of accidents occurring each year after becoming a bus operator are listed. Our studies have shown that accidents decrease with the experience of the operator.[3]

A control group of 60 operators was used for comparison. Their medical examinations were submitted for profile classification, and they were all satisfactory. None was classified Grade 4 in any category. They were chosen from similar divisions as the unsatisfactory group, and their buses traveled the same routes in the same seasons of the year.

The accident rates of these two groups were studied for the four-year period of bus operation. All the accidents considered under operator control were listed. The accident rate was calculated by dividing the sum of the accidents for the entire group by the sum of the time served in years. It was found that the physically qualified group had 2.07 accidents per man per year, while the medically unsatisfactory group had 2.97 accidents per man per year.

In other words, if 2.07 accidents per man per year are considered standard in this group, the medically unsatisfactory group has approximately one more accident per man per year, or a 43.5% higher accident rate.

In Chart IV Column A shows the total number of accidents for each operator. Column B shows the time, in years, that the operator worked, and Column C shows the accidents per year for each operator. When the driver did not work for an entire year, his record was annualized on the basis of the work he did.

If we calculate the average accidents per year on the basis of the annualized figure in Column C, it can be seen that the average of the 10 operators is 5.17 accidents per man per year, which is much higher than the figures derived by dividing the total number of accidents by the total time (in years) of driving. This method of annualization of accidents is not as accurate as the method described above, and comparison between the control and study group cannot be obtained.

These data, although they utilize a small number of cases, are significant and reveal that detailed and complete medical examinations classified in the Profile as described, may be an important means of predetermining the ability of an operator to drive safely.

It should be noted that of the original 10 operators who were considered unsatisfactory, only four are still driving. Two died; two, of their own accord, requested transfers to non-driving jobs; one retired, and the other left the job.

The four who have continued as operators have reported at regular intervals to the Medical Department for observation.

Comment

THE purpose of the Profile is to establish a simple, practical, standard method of evaluating pre-employment and periodic medical examinations in industry.

The Profile evaluation will also permit comparison of the medical status with the safety

CHART IV.
ANNUALIZED ACCIDENT DATA OF BUS OPERATORS WITH UNSATISFACTORY PROFILE CLASSIFICATION

	A Total No. Accidents	B Years of Driving	C Accidents Per Year	Comments
T.McG.	3	4.0	.75	Still driving
T.M.	10	3.0	3.33	Drove two years—died
F.M.	3	.16	18.7	Drove only two months
C.A.	7	4.0	1.75	Still driving
F.L.	8	1.7	4.70	Drove 21 months—died
C.K.	15	4.0	3.75	Still driving
R.N.	4	.9	4.4	Drove 10 months
W.L.	7	4.0	1.75	Still driving
T.McG.	13	3.0	4.33	Drove three years
P.C.	5	.6	8.25	Drove seven months

Total Number of Accidents = 51.71
Annualized Accident Rate = 5.17 Accidents per Man, per Year

record of the employee. The data gathered from this comparison may disclose various factors that make an individual accident prone, and will help evaluate the efficiency of the medical and safety methods under study.

While most investigators agree that it is difficult to give a numerical value to a medical diagnosis, it must be remembered that the Profile Classification is established in an effort to standardize criteria for the physician in industry.

In the Profile, the details of the organic criteria, have not been listed for two reasons:

1. The complete listing of the Profile rating for every medical condition is too lengthy.

2. The rating varies with each individual job. For example, severe hemorrhoids would be Grade 4, where a job requires prolonged sitting; however, it might be classified Grade 2 for a job where sitting is not essential.

A candidate for a bus or truck operation, would be classified Grade 4 for certain visual defects that would not disqualify him for the job of clerk. Any condition causing the worker to be unsatisfactory for his specific job should be classified Grade 4.

While a single Grade 4 classification in any category should disqualify a candidate for a job, two or more Grade 3 classifications may also be disqualifying in the absence of a Grade 4.

For example, a candidate in the older age group with restricted physical capacity classified Grade 3 under "P" who also has hypertension or impaired vision sufficient to warrant Grade 3 under "O" or "E," would be considered unsatisfactory, even though the individual defects by themselves are not disqualifying.

The interpretation of the Profile is the responsibility of the physician, and his skills and experience must be utilized in evaluating the employee as a whole, for a particular job. These skills are especially important in the grading of the organic defects. Many candidates have more than one organic defect. While none of these defects may be disqualifying, the evaluation of the patient as a whole may justify a Grade 4 classification under O. The success of the Profile depends on the skill of the industrial physician. There is no substitute for good clinical judgment.

On January 1, 1954, the new regulations of the Interstate Commerce Commission will require that every operator under its jurisdiction have a detailed physical examination every 36 months. We feel that our standards for classifying bus operators could apply for all operators in the transit and trucking industries. The Profile System of evaluating the medical examinations, could be instituted, thus standardizing the medical defects and assuring a common language.

In our company the qualifications for the position of bus operator are high. This is a major reason for the marked reduction in the accident rate. The physical condition of an individual is constantly changing and for this reason medical examinations should be performed periodically to determine the presence of changes which might cause the operator to become a hazard to public safety. Early detection will permit early correction and rapid return to work. If a defect is not correctible the operator should be given other work.

A more complete comparison of the Profile classification and the accident rating of our veteran employees is now in progress. We hope that this will give us further information about accident prevention and the physical and mental factors related to it.

Summary

1. A METHOD of evaluating pre-employment and period medical examinations by a Profile classification is described.

2. The purpose of the Profile is to establish a simple, practical, standard method of grading the physical and mental qualifications of applicants and employees in industry.

3. The method permits comparison of medical findings with accident records and will permit further study of factors in accident prevention.

4. The success of the Profile classification depends on the skill and experience of the industrial physician.

[NOTE: We are indebted to EDWARD FLAMM, Research Assistant to the Executive Director, Third Avenue Transit System, for his assistance in compiling these data.]

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Corporate Manners

PUBLIC relations is a very simple thing. When we say "public relations" we mean simply corporate manners! There isn't anything complicated about that. Edgar M. Queeny, Chairman of the Board of Monsanto Chemical Company, expressed the same thought in these words: "Public relations seek to identify a corporation with that which in an individual would be good manners and good morals." Corporate good manners are the combined good manners of all individuals who compose the corporation.

—Pioneer Mutual Insurance Company.

Peripheral Vascular Disorders

CAUSED BY INDUSTRIAL OCCUPATIONS

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PERIPHERAL vascular diseases are usually considered as related to the field of the internist, especially the cardiologist. However, some vascular disorders result directly from industrial occupations and thus become the problem of those physicians who have chosen the field of industrial medicine as their specialty. Only those vascular disorders which are the direct result of industrial occupations here will be considered. They may be divided into two groups: (a) those which are the immediate result of trauma, and (b) those due to the delayed results of trauma.

Immediate Results of Trauma

1. TRAUMATIC ARTERITIS. This results in thrombosis of arteries involved by penetrating missiles or crushing injuries. The diagnosis is obvious, the symptoms develop rapidly soon after the accident. There is blanching of the skin, coldness of the part, numbness, absent pedal or radial pulse. Discoloration, cyanosis and gangrene develop if the condition is not controlled. Treatment is directed to improve the circulation, by the use of vasodilators, and papaverine, gr. 1, every four hours intravenously, to overcome arterial spasm. Anticoagulants, such as heparin, 50 mg. intravenously, followed by dicumerol, may help. If the vessel walls are intact, surgery is inadvisable. Amputation, however, may be necessary.

2. TRAUMATIC SEGMENTARY ARTERIOSPASM. This is the term used when there is spasm of a large artery due to severe injury, or fracture. The spasm may be so marked as to simulate arterial occlusion. Radical surgery may do harm; conservative treatment will be rewarded with favorable results.

3. ARTERIOVENOUS FISTULA. Arteriovenous fistulas occur when a communication between the two vessels is produced by injury. There may be some delay after the injury has occurred before clinical signs develop. Within the cranial cavity, carotid-cavernous arteriovenous fistulas occur in the cavernous sinus through which the internal carotid artery passes. When due to fracture of the skull, the fistula may develop several days or weeks after the injury (usually following straining), and occurs spontaneously when the weakened arterial wall of the internal carotid artery gives way from the pressure, and arterial blood under arterial pressure enters the venous system. This causes a progressive pulsating exophthalmos, associated with dilation of the venous system of the immediate area, and a bruit which can usually be heard with a stethoscope. The patient also is aware of a pulsating, swishing sound in his head. Ligation of the common carotid artery may cure the patient, but if not, ligation of the internal carotid artery must be resorted to, after it has been demonstrated that an adequate collateral circulation exists in the circle of Willis.

The arteriovenous fistulas which occur in the neck or extremities produce definite clinical signs. The transverse diameter of the heart is increased. The pulse rate becomes rapid. The systolic pressure rises, with a drop in the diastolic pressure. There is swelling at the site of the fistula, a thrill can be felt, and a bruit can be heard with the stethoscope. Direct pressure over the fistula may produce a drop in the pulse rate. The venous blood shows an increase in its oxygen content. Arteriography may provide visualization and the extent of the defect. With the exception of the intracranial fistulas, it is best to wait three to six months to permit satisfactory collateral circulation to develop, unless there are indications for earlier surgery.

Delayed Results of Trauma

1. CHRONIC ARTERITIS DUE TO CONTINUED TRAUMA (CRUTCH ARTERITIS). The cause is due to pressure in the axilla on the brachial artery from a crutch which is not properly adjusted. The symptoms which develop are weakness of the hands, followed later by weakness of the arms. Blanching of the fingers from effort occurs, or from exposure to cold. The patient complains of numbness and tingling in the fingers and hand. There is disappearance of the radial pulse, the extremity becomes cold; thickening of the brachial artery, and tenderness of the vessel may occur. The treatment is essentially the same as for traumatic arteritis mentioned above.

2. TRAUMATIC ARTERIOSPASM. The cause is an injury, such as a fall or penetrating wound. The symptoms appear after the immediate effects of the accident have subsided and the fractures healed. The patient complains of pain and coldness of the part and an inability to perform his duties. The lower extremity is most frequently involved. The feet are cold and moist, with a tendency to cyanosis. The pulse may be diminished. Episodes of blanching of the skin and evidence of vasomotor instability may be present. If the larger arteries are involved, the patient will complain of cramps in the muscles, also of numbness and paresthesias, and the pulse may be absent. The condition may persist for months, but the symptoms usually will subside.

3. SCALENUS ANTICUS SYNDROME. The symptoms may be sensory, motor, or circulatory. The most common complaints are pain and weakness of the arm. The early symptoms may be tingling and paresthesias. The patient is unable to use his hands for fine work. Pain is usually from the elbow down to the hands, and may be on the ulnar or radial side. Coldness of the hands, with episodes of blanching and cyanosis may occur. Atrophy of the small muscles of the hand develops. The pain may be excruciating and may be higher up in the arm. Certain movements of the head and neck may elicit these pains.

Examination may find the radial pulse diminished or absent. The pulse may disappear when the arm is elevated on the affected side, or be decreased when compared to that of the opposite side. Headache, Horner's syndrome, precordial and anginal pains have been reported. To determine if the scalene muscle is the offending factor, inject the lower half of the muscle with procaine to relieve the muscle spasm. Temporary relief of symptoms should occur if the muscle is the offending factor. Scalenectomy is the treatment in these cases. If a cervical rib is present, removal may be necessary. Resistant cases in which vasospastic symptoms persist may require cervico-thoracic sympathectomy.

4. PNEUMATIC-HAMMER DISEASE (STONECUTTER'S DISEASE). Any occupation where pneumatic or vibrating tools are employed, such as riveting guns, etc., may induce disturbances which react upon the smaller arteries and produce a vasospastic disorder. This is seen in stonecutters, riveters, airplane and locomotive workers, road builders, etc. Many cases of pneumatic-hammer disease among women employed as riveters in the airplane plants and similar industries are reported. The hand which supports the pneumatic tool is involved. In right-handed people, the left hand will show the phenomenon, and vice versa. The symptoms appear two to 11 months after using the machine. The cause is thought to be a percussion neuritis. The symptoms come on gradually. Blanching of the fingers is first noticed, usually the middle, ring and little fingers, and later the index finger and tip of the thumb being affected. The fingers are cold to the touch, and numbness is complained of, and there may be tingling. Blanching usually can be produced by placing the hands in cold water, or on exposure to cold. The symptoms may not occur while working. Usually there are no trophic disturbances. This vasospastic phenomenon may persist long after the occupation is discontinued.

This condition must be differentiated from several others, such as Raynaud's disease, thromboangiitis obliterans, and obliterating endarteritis. Raynaud's disease usually occurs in females. It is a symmetrical involvement and may affect all of the extremities, with occurrence of trophic changes. The color cycle of blanching and cyanosis is present. Thromboangiitis obliterans is an occlusive vascular disease, which usually occurs in the lower extremities. Obliterating endarteritis is an inflammatory vascular disease with gangrene.

Treatment consists of changing the occupation, avoidance of unnecessary exposure to cold, and of excessive smoking, and the use of vasodilators. Papaverine hydrochloride, gr. 0.5, three times a day, with phenobarbital, gr. .25, is used. If the arteriospasm is intense and there is no response to medical management, sympathectomy must then be done.

5. OSTEOPOROSIS (SUDEK'S ATROPHY). This is also called "painful osteoporosis" and reflex traumatic arthritis. The tarsal and carpal bones are usually involved. The cause is a reflex initiated by some focus of irritation, which becomes fixed and self-perpetuating, even when the original exciting cause has disappeared. The injury producing the syndrome may be trivial, such as a sprain of a ligament at the wrist or ankle, a slight injury to a nerve, a burn; or it may be more serious, such as a fracture or gunshot wound. The severity of the original lesion does not appear to have any relationship to the course of the disease. The condition may progress until it involves all the tissues of the extremity, or it may be mild and begin to regress before striking or intractable symptoms develop.

The presence of severe, persistent burning pain in a patient whose injured limb is properly immobilized and apparently on the way to recovery should make one suspicious of a beginning reflex dystrophy. In this stage, the cutaneous temperature of the affected extremity is elevated, the pain localized to the site of the injury, and osteoporosis is not yet present. However, there is periarticular edema, which as the disease progresses, spreads to the surrounding tissues. The joint then becomes fixed as a result of this edema, as well as by the splinting action of the irritated muscles. In the later stages, the skin is not so warm, but may become cyanotic, tense, and shiny. As the process continues, the skin and muscles become atrophic and osteoporosis appears in the x-ray. Bony changes are spotty at first, subsequently diffuse. The initial lesions in the bone are due to an increased blood flow to the bone; a superimposed atrophy of disuse complicates the picture.

Underlying Mechanisms: The blood flow in the affected limb is greater, as can be shown by phlethysmographic studies. At lower temperatures, the difference in circulation is not so great as at higher temperatures. Nervous pathway: There is an afferent arc in the somatic sensory nerves and an efferent arc through the sympathetic nerves; also it is possible that an axone reflex, or a spinal reflex with an outflow through the posterior root vasodilators may also be involved. Thus, a continuous flow of afferent impulses from the injured tissues reaches the spinal cord where the cell stations of the sympathetic nervous system are reflexly activated. As a result, various vasomotor and pseudomotor reactions are initiat-

ed locally. The predominant effect is vasodilatation, although vasoconstriction may take place later.

Clinical Course: The injury may be single or multiple, serious or apparently trivial, followed by pain and disability. In three to four weeks marked osteoporosis develops. Profuse perspiration, coldness of the affected part, later changes in the cartilages, and ankylosis may develop. The condition may last for months, but ultimate prognosis is favorable. The diagnosis is suspected when there is a history of injury with evidence of disturbed circulation.

Treatment: The most important thing in preventing post-traumatic dystrophy is adequate control of pain. This can be done either by nerve block or infiltration of acute hematomas with procaine solution. Either will stop the activation of autonomic reflexes through painful sensory impulses. One should take all steps to eliminate or minimize chronic stimulation from foci of irritation. This involves the complete reduction of fractures, surgical correction of torn tissues, and adequate immobilization of the involved extremity.

Once the condition is present, the treatment is to break the reflex arc. This is accomplished on the afferent side by healing the original irritating injury and on the efferent side by destruction of the continuity of the sympathetic nerves. Local excision of areas which are suspected of serving as chronic stimuli produces good results, except where demonstrable nerve injuries are present. When the syndrome is recognized early, infiltrations of procaine are very helpful. If seen late in the course, paravertebral block, periarterial sympathectomy, or sympathetic ganglionectomy are considered of value. Also, bed rest, papaverine hydrochloride gr. 1, intravenously every four hours, and passive vascular exercises are used.

6. CAUSALGIA. This is a condition which occurs following injury to peripheral nerves. It is most frequently seen following injuries to the median and sciatic nerves, but can occur following injury to other nerves. This clinical entity is characterized by pain (usually burning) in association with vasomotor and trophic changes. The pain is increased by emotional and environmental stimuli. The probable mechanism is an interaction of impulses between sympathetic and sensory fibres at the site of the injury. It occurs in severe form in from 2% to 5% of major nerve injuries.

Pain can be relieved by appropriate sympathectomy, which, however, must be complete. Where the lower extremity is involved, removal of the lower dorsal sympathetic chain may be necessary. Procaine block is a valuable diagnostic procedure and in certain instances may prove to be an effective form of treatment. It should always be tried prior to surgery. Difference of opinion exists concerning the indications for sympathectomy. However, recently most writers feel that it should be done as soon as the diagnosis is established, so as to prevent the psychic trauma of prolonged pain and crippling joint stiffness, which follows disuse. Surgical sympathectomy of the arm is carried out by interruption of the rami which connect the second and third dorsal ganglia to the second andthird intercostal nerves, and to divide the chain below the third dorsal ganglion. The stellate ganglion need not be interfered with, thus avoiding a permanent Horner's syndrome, which would result. Avulsion of the second and third intercostal nerves, in addition, is recommended by some, with encasement of the proximal stump of the sympathetic chain in an impervious sack of silk, polythene tissue, or metal. This latter procedure is not always necessary, as the painful lesion is usually corrected before regeneration may occur.

Surgical sympathectomy of the leg in most instances can be accomplished by removal of the second and third lumbar ganglia for conditions below the knee. For lesions affecting the thigh, it may be necessary to resect, in addition, the 11th and 12th dorsal sympathetic ganglia, as well as the first lumbar ganglion. The results of sympathectomy vary. Some patients are completely relieved of pain, others are conscious of a tingling and numbness or weakness, and some few have a return of sweating. These may complain of slight return of burning pain.

7. THROMBOPHLEBITIS AND RELATED CONDITIONS. Trauma, operative and non-operative, may result in injury to the vessels, or indirectly through the effects of injurious substances from destroyed tissues. Infection plays a role and may cause inflammatory changes in the vessel wall. There is usually tenderness, redness and induration at the site of the thrombophlebitis. The pulse and the leucocyte count are increased, as is also the temperature.

Treatment consists of lumbar sympathetic block, repeated as often as necessary, local heat to the area of thrombosis, heparin and dicumerol combined therapy, and the use of antibiotics. Rarely is there indication for venous ligation.

8. VASCULAR DISORDERS PRODUCED BY PROLONGED EXPOSURE TO COLD.

(a) Frostbite: If treatment is begun within six to 16 hours, it may be possible to prevent gangrene. Do not massage the involved parts. Apply heat, or take the patient to a heated room. Operative interference or amputation of the gangrenous areas should be delayed. What may seem to be impressive gangrene may be only superficial, and judicious surgical judgment may save a considerable portion of the limb. Treatment consists of elevation of the extremity, the use of heparin and paravertebral sympathetic blocks, improvement of the circulation, and germicidal solution, if blebs or ulcerations are present.

(b) Immersion Foot: The skin should be kept cool—below 85° F. Elevate the feet, encourage venous return, and avoid contact pressure. This reduces tissue metabolism enough so that there

is sufficient oxygen for the cells. Most cases respond, but some neuritic pain may persist for as long as six months, or more.

Summary

PERIPHERAL vascular disorders are frequently encountered in the field of industrial medicine. Those disorders which occur from the immediate results of trauma do not, as a rule, present unusual problems of treatment or just compensation. Vascular disorders which occur as the delayed results of trauma often present to the industrial surgeon prolonged complaints of pain, with varying degrees of disability which may be difficult to understand, especially when the injury was of a trivial nature, such as a sprain of a ligament, or a slight injury to a nerve. As the patients' complaints increase and their disability is prolonged, they may be considered malingerers, or thought to be exaggerating symptoms. Careful evaluation and study of their symptoms, and a knowledge of the vasomotor mechanisms which may cause these obscure conditions is necessary.

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Jobs for Old People

UNEMPLOYMENT among older workers has grown steadily for over half a century. It lessened during World War II and Korea, but the popular forces strongly favor it. The argument that won the passage of the Old Age and Survivors Insurance and Old Age Assistance laws was retirement at 65 as a means of displacing the old with the more desired young people. Since then pension schemes of all sorts have multiplied. There is grave doubt whether they are able to furnish sufficient mony to keep the retirants without further efforts on their part or supplementation from other sources. For example, the average payment under Old Age and Survivors Insurance is now probably about $45 a month; its cost (1950) was $2,100,000,000; to extend coverage to all and raise the payment to $100 a month would not appeal to those who hope for tax abatement. To have $100 a month for life starting at 65 from one's own savings means capital amounting to $17,000, yet more than half of all families have less than $500 in savings. Some industrial pension plans are considered unsound; others will not apply to many contributors because they demand long years of service or because credits are sacrificed when a job is lost before retirement. Where else is support to come from in retirement? Less and less from other members of the family, because of children's needs, commitments to monthly payments on the essential luxuries, small living quarters, and dispersion of married sons and daughters. Witte says that jobs are not the answer, and most experts egree with him. But they have to be the answer. The alternative of charity, even the cooperative sharing of the welfare state, is unacceptable for reasons given above; equally important, a job means occupation, which is a basic human need at all ages. To live is to function. To function as a human being is to be active in things of value to self and to others. To be less active than the physical state permits is conducive to idleness that magnifies problems of mental and physical health. To seek only pleasure or to hold that the world owes one a life of ease because one has worked hard all his life is soon identified as a bitter delusion. Old people, like other normal people, perform best when much is expected of them. Yet there is no simple solution to the question of how to get jobs for old people.

—From "The Effect of Aging of Population on General Health Problems," by ROBERT T. MONROE, M.D., in *New England J. Med.*, August 20, 1953.

The Technical Witness

Preparation for Court Appearance—The Attorney's Viewpoint

T. DONALD WADE, of the Detroit Bar

MOST lawsuits of any complexity (and any lawsuit which requires an expert witness is complex) are won or lost before the parties enter the courtroom. The picture of the nimble-witted lawyer and the profound and learned expert witness confounding their opponents and sending them blushing with confusion and embarrassment, defeated, from the courtroom, although exaggerated, may be superficially true. But the easy appearing facility, skill and learning were undoubtedly the result of many long and tedious hours of painstaking preparation and collaboration in the office and the laboratory.

Mr. Lester P. Dodd, immediate past-president of the State Bar of Michigan, in a well-known address[1] states that in his 35 years of trial experience, ". . . . I can truthfully say that I have never encountered a superman or a genius on the opposite side of the table in the trial of a lawsuit." He quotes as one of the sagest observations he ever heard made on the subject of cross-examination, a statement of a Milwaukee lawyer that,[2] "The most successful cross-examinations I have ever made have been those I have made of my own clients in my own office before trial."

The lawyer's pre-trial preparation falls into two broad categories: (1) the study and development of the facts, and (2) the study and development of the law applicable to these facts. The relative importance varies with each case. Some cases may be tried solely upon an agreed set of undisputed facts, often reduced to writing and filed with the court in the form of a signed stipulation. In such a case the only matters to be contested are the applicable rules of law. With such cases you obviously have no interest. There are other cases in which the applicable rule of law is clear and unquestioned, and the only dispute is over just what happened. In most contested cases, however, some of the facts and some of the law are in dispute, and the lawyer must prepare both. You, of course, are concerned only with the preparation of the facts.

The lawyer's factual preparation itself falls into two broad classifications: (1) the ascertainment of what the facts are—the truth, and (2) the planning of the most effective method of presentation of the evidence to support those facts.

The ultimate purpose of any lawsuit is to ascertain the truth. That there may be two diametrically opposed versions of what has taken place does not necessarily mean that one version is fraudulent or is advanced for the purpose of misleading, although, of course, that may be, and sometimes is, the case. The ordinary lawsuit involves an honest dispute over what was said or took place—or the result of statements or occurrences. If there were no grounds for difference, there would be no lawsuit. Assuming that both sides have an honest and justified belief in their respective versions, the problem remains of how to convince the tryer of the facts to accept the version that the particular lawyer believes to be correct. In what order shall he present the evidence? Which one of the four witnesses who saw the accident shall he use? Or shall he use them all? If so, in what order? What can he do about a witness whose manner is so unconvincing that nobody will believe him when he states his own name? The hang-dog "Milquetoast"has to be inflated and propped up; the bombastic blowhard has to be toned down; and the inarticulate has to be helped to express for himself what the lawyer may have learned only after hours of careful questioning in his office. The so-called "coaching" of witnesses is not only justifiable, but essential. Its purpose is not to distort or suppress the truth. Quite the contrary. Its purpose is to make the truth discernible from the welter of information which the lawyer has acquired—to present to the jury or the court succinctly and understandably the facts which the lawyer has painstakingly learned through hours, days, or even weeks of study and investigation.

Facts ordinarily denote acts, events, or occurrences. The lay witness may testify to any factual matters, i.e., as to anything he has seen or heard or done, such as lightness, darkness, sounds, quantity, size, weight, distances, directions, area, conversation, identity; but what he thinks about these matters—his opinion about them—is not admissible. He may furnish the facts, but it is the function of the jury, guided by the court, or the court itself if no jury is sitting, to draw inferences and to come to conclusions.

Eventually, however, we reach areas in the sciences or arts where conclusions can be drawn or opinions properly formed only by persons specially trained in some particular field of knowledge. Scientific facts may have no meaning without the enlightenment which may be cast upon them by one who is trained to understand them. How, for example, could a judge or jury from the description of the size, shape and composition of the cables of a suspension bridge and other pertinent data, reach any intelligent conclusion as to the weight those cables will support? But the trained engineer can readily translate these data into stresses and strains which enable him to express a valid opinion. It is at this point that the expert witness becomes a necessity. He possesses the necessary special knowledge, training, skill, and experience not possessed by the layman. Because of his special knowledge, unlike the layman, he is permitted to express his opinion with respect to the results flowing from proved facts, some or all of which may have been established by other witnesses, and hence, concerning which he may have no firsthand knowledge. In addition, the expert witness may himself furnish facts which are

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beyond the knowledge of the ordinary layman, such as a deformity shown by an x-ray, the proper place for the application of a splint, or the result of tests as to the amount of dust present in the air of a factory. He is not necessarily a physician or surgeon. An expert may be called from any profession or occupation. One legal writer[3] has found it worthwhile to discuss specifically 22 different types of expert testimony covering the field of human knowledge from medicine to agriculture, engineering, and forgery. There are many that he did not cover. What I shall say applies in varying degrees to any technical or expert witness. Although I appreciate that many to whom this is addressed will spend a great deal of their court time in workmen's compensation matters, this paper does not deal specifically with this type of case, because the broad suggestions contained herein are applicable to all types of cases and may be relaxed in compensation cases as experience and observation may indicate, dependent upon the degree of informality of procedure in such courts, the relaxation of the rules of evidence, and the familiarity of the lawyers and commissioners with medicine and surgery.

Because of his special knowledge the expert witness usually assumes an importance far beyond that of the ordinary factual witness. He must not only present his evidence in court, but he must ordinarily instruct the lawyer in his subject. The relationship of expert and lawyer before trial becomes that of teacher and pupil. In reality the expert prepares the lawyer for trial. The comic strip character, Willie Mullins, spoke more wisely than perhaps the cartoonist knew, when looking through the bars of the lockup, replying to the inquiry of his wife, Mamie, as to what she could do for him he said, "Get me a gabby lawyer and two competent witnesses." As Dr. McCord[4] has stated, "The value of the expert indeed may be greatest during the period of trial preparation as an adviser and technical counselor rather than in the witness chair itself."

In preparing a case before trial I suggest the following to the expert witness, some of which I will concede may sound obvious, but, unfortunately, not infrequently are disregarded:

Learn Thoroughly the Facts

FOR THE industrial hygienist regularly employed in industry this may have been accomplished before the lawyer is consulted. Indeed, his study may be the basis for the referral to the lawyer. The same is true of the physician or surgeon who has attended an injured, ill, or deceased person.

The private consultant, however, probably will be called in first by the lawyer. If so, his investigation will commence with that individual. Generally the lawyer will outline to him the background as the lawyer has learned it. He already will have interviewed the client and at least some, if not all, of the witnesses. In some cases there will have been a careful investigation by trained and experienced investigators before the case reached the lawyer. This is an ordinary practice, for example, in the case of contested claims upon insurance policies for death benefits or for disability. The lawyer will provide you with a general background, a statement of the applicable law and in some rare instances all of the facts you will need. More likely you will wish to make further investigation yourself. Do not hesitate to obtain the names of any other pertinent witnesses or request to examine any files, records or other data that can be made available to you. Perhaps you will wish to visit the premises. All data should be carefully reviewed, sifted, and considered. The avenues of investigation must be chosen to a large extent by yourself, since, after all, you are the expert and know the possible avenues of approach available in your field. A full and complete knowledge of all of the pertinent factors and of any surrounding background information which may assist in the interpretation of the directly operative facts is essential. The conclusion of the handwriting expert may be greatly affected by the fact that the subject was recovering from a broken arm at the time the questioned signatures were made, and the industrial physician's opinion as to the cause of the injuries may be affected by the state of the patient's health immediately prior thereto.

At this point the private consultant should make certain that he wishes to continue with the case. In no event should he do so unless he is willing to testify and is also willing to take the time necessary for the preparation for presentation. Consult with the lawyer. Try to work out with him how much time will be needed. Bear in mind that the most careful of such estimates may be woefully inadequate. Allow a liberal additional period, and if you don't want to devote this much time, and run the risk of possibly devoting much more; if you aren't willing to sit around waiting for the case to be called, if necessary, don't take the assignment. By means of subpoena a technical witness within the jurisdiction of the court may be compelled to testify as to factual matters of which he has knowledge. The private consultant called in after the case has been commenced, for the purpose of testimony and not treatment, cannot hide behind the doctor-patient privilege, limited as that now may be. If you have acquired knowledge of the facts concerning a case, you may be called to testify whether you wish to or not. This particularly works a hardship on the physician or surgeon who has been called upon for treatment without thought of a subsequent lawsuit. It is, however, one of the risks he runs as an incident to his profession. Even in such cases enough time should be allowed for full preparation. In all probability the lawyer will be willing to consult with such physician, if he prefers, at his office after ordinary office hours. The lawyer may actually prefer this to a visit during office hours when his time is taken up by the frequent interruptions of the telephone and patients. For the industrial hygienist, whether he be regularly employed by industry or as a private consultant, the devotion of adequate time to the preparation of court cases should be considered a portion of his routine duties.

At this time the expert should make such examinations and tests and conduct such experiments as his judgment dictates necessary, and as his science has made available, to enable him to arrive at a valid opinion. He again is the judge of what is appropriate in this respect. Obviously, in a personal injury case, for example, the physician will wish—and usually will be required—to examine the injured party. The industrial hygienist may wish to conduct air or dust sampling tests. The metallurgist may wish to conduct chemical or microscopic examinations to determine the grain structure or composition of the defective metal. In making such examinations or tests the expert must bear in mind that he himself must make the examination or conduct the experiment, or, if assistance is needed, the examination or experiment must be done under his

direct supervision and with his participation. The rules of evidence in general forbid him to take the result of someone else's work and present it as evidence. That is hearsay. In such cases the person who actually did the work must be also called as a witness, thereby unnecessarily prolonging the trial, increasing the expense, providing one more witness for the lawyer to interview, and, sometimes, seriously lessening the force of the evidence. A look in the microscope yourself may obviate this. Similarly, the physician or surgeon who examines a patient, not for treatment, but solely to testify in a lawsuit, should bear in mind during his examination that he will not be permitted to testify as to what the patient told him as to the patient's condition. That, too, is hearsay. Obviously it is too easy for a patient to fabricate expressions of pain and similar self-serving statements to permit them to be introduced in evidence. The guaranty of truth of statements made by a patient to his doctor to obtain treatment and alleviation of his condition is not present when the patient is being examined only for trial.

Don't hesitate to ask for assistance if that is necessary. If you feel that further specialization is desirable, ask for it. Do not attempt to be an expert in anything but your own field. Your work will be better, and you will be more respected if you honestly and unhesitatingly state that an investigation is beyond your field and suggest the assistance of another expert.

Educate the Lawyer

COMMENCE his education when you have finished your investigation or while it is in progress. His knowledge of your subject may be nothing at all or rudimentary or surprisingly great. In any case, it is your job to see that he learns all that may be useful for him to know about your subject. This means that he must be informed on background matters which he may never actually use. Give him that additional area of information essential to a full understanding of the narrow scientific issues of the particular lawsuit. Remember that he must be prepared not merely to lead you through your direct examination, but also to cross-examine the opposing expert on matters on which the other expert's opinion will be opposed to yours, and also, upon re-direct examination, to ask you the questions necessary to clarify the confusion which the opposing lawyer has sought to create in his cross-examination of you. For this he needs a wide background. The whole trial of the case may depend upon this schooling. Even though it is planned that you be at his elbow throughout the entire trial, your whispered suggestions at the counsel table or your hurried explanations at recess can have little meaning unless an adequate background has been created. If you cannot spend the time for appropriate education, suggest someone else, possibly an assistant, to answer his questions.

Familiarize him with the nomenclature, and help him devise the means of translating it into layman's language. If necessary, select some books or parts of books and some articles for him to read. It will save your time, and he can do the reading at his leisure. Familiarize him in general with the literature upon your subject and particularly with what the opposing witness, if you know who he will be, has said or written. This gives the lawyer excellent material for cross-examination.

If examinations or experiments are to be made, particularly if the results are to be used as evidence, a full description of the methods and procedures which you have used may be desirable or necessary later in the courtroom. Notify the lawyer of the time and place. He may wish to be present and witness the entire process, step by step. Discuss the desirability of doing so with him beforehand. Express your opinion as to the necessity of his attendance, show to him and explain the workings of any special equipment that may be used either in your examinations or that may be standard or new in the trade or industry.

The lawyer usually will be eager to learn. It is his business to do so. He has done it many times before in many different occupations or professions. He will ask all the questions he can think of to increase his knowledge and fill in the chinks. But you will be the teacher. The pupil can't tell you what to teach. It is your subject. You know of what it consists. It is your responsibility to see that he is fully informed. Certain lawyers will have a considerable amount of information in certain fields, such as the knowledge of medicine possessed by some specialists in workmen's compensation, or the knowledge of science in general of some patent lawyers, many of whom have degrees in science or engineering. The expert witness usually can appraise the extent of such information and govern his educational program thereby.

Make your Report

WHEN YOU have completed your investigation of the facts, make a full report. Leave out nothing. It may be that on the basis of your report the plaintiff will decide not to start the suit. Or if the case has been started and you have been called in for the defendant, your client may decide to settle. If he has no case, the best service you can render to him is to let him know as soon as possible. If your client and his lawyer want to go ahead anyway, and you have no faith in the case, get out. You will be paid for what you have done. Don't compromise yourself by retaining your association with something in which you have no faith. It obviously would be improper, however, for you now to accept employment by the other side, even though your investigation has not included reception of confidences from your employer.

Even if your report is favorable it usually will include some damaging findings. Nothing is black and white. If there were nothing to be said for the other fellow, there would be no lawsuit. Sometimes the question may be very close indeed. Under no circumstances suppress or minimize the unfavorable factors. Be frank. Reveal all. The failure of the lawyer to understand the weaknesses of even a good case may result in its loss.

If, as is usual, your report includes some damaging material, it may be well to discuss the matter with the lawyer verbally before reducing your report to writing. Possibly he will not want a written report. There are many ways today that opposing counsel can learn of the existence and obtain possession of the written report. There is no need to assist your opponents in locating the weak points.

Help Plan the Presentation

SUGGEST to the lawyer your theories and possible alternative courses of approach.

Help the lawyer to select those facts to be proved,

possibly by other witnesses, which are essential or important. Reduce them to only those that are necessary. Cull out all others, no matter how interesting. You know better than anyone else what facts are essential to support your conclusion.

With the selection of the facts comes the method of proving. The establishment of the ordinary fact is not your concern. The lawyer is better fitted for that than you. But for the establishment of scientific facts and their proper interpretation to the jury or court, you may have invaluable suggestions. If the results of your examination or experiments are to be used, what will most graphically illustrate them? What apparatus and equipment used for that purpose will be selected and brought to the court?

At this point it might be well to note that demonstrative evidence—exhibits or physical things—may be much more convincing than any amount of oral testimony. A picture may be worth a thousand words. Exhibits are as varied as the nature of the litigation and the ingenuity of counsel and the witness. They may consist of an object itself involved in the controversy, such as the weapon used in an assault, or a piece of metal which has broken under stress. Or there may be an exhibit prepared for use in a particular case, such as the photograph of an accident or the x-ray of an injury. Graphs, charts, micrographs, macrographs, summaries of books of account, sketches, such as skeletal charts, specimens of dust, etc., all are useful. How much more effective is the physician's testimony with the actual x-ray plate or electrocardiogram in his hand to illustrate his statements. X-rays, of course, are standard exhibits, and the Wayne County Michigan Circuit Court finds them so frequently used that it provides a number of viewers or shadow boxes for their more effective demonstration. Frequently a new illustrative exhibit may be devised by the expert. Consult with your lawyer. Make suggestions to him. All exhibits to be acceptable in evidence must be properly identified. Exhibits relating to the cause of action itself must be properly related to the factual situation. Illustrative exhibits must be identified by the person who prepared them or under whose supervision they were made and their appropriate relationship to the subject matter established.

One of the most essential points in the collaboration of the lawyer and expert is a complete agreement as to terminology—not only the technical terms, but also the layman's terms into which they are translated, and the use of ordinary language. Much thought and care should be given to this phase of preparation so that there can be no misunderstanding between the witness, the lawyer, the court, and the jury. Frequently, if this is not done, a group of words in a question or an answer may have an entirely different meaning to each. Sometimes it is desirable that the expert assist the lawyer before trial in the actual phraseology of questions to be used, particularly on direct examination. This is especially true of hypothetical questions. Although frequently criticized, nothing as yet has been devised to take the place of the hypothetical question, and Mr. Lloyd Paul Stryker, one of the most effective trial lawyers of modern times has said,[5] ". . . . indeed I fail to see how a scientific issue could properly be decided without questions of this kind. I agree that the use of these questions is frequently abused in practice—so are scalpels and gavels, but that is not a sufficient excuse for their total abolition. . . ." By means of this question the expert, usually a physician, is enabled to give an opinion in a situation concerning which he has no firsthand information. In this type of question the lawyer recites as assumptions all of those facts which he has proved (or intends to prove, in certain cases permitted by the court) and upon which his case is predicated. At the conclusion of the recital the expert is asked if he has an opinion based on reasonable certainty and from a medical or surgical viewpoint. He then replies that he has, and after another question states his opinion, and usually thereafter, following additional questions, gives the reasons for his opinion. Since the entire case usually is summed up in a hypothetical question, and since the other side will attempt to attack it in every conceivable manner, its careful phraseology obviously is of vital importance. Frequently this can be done in advance, and the expert can play an invaluable part in its preparation. If one of the stated assumptions is not supported by proof, the entire question may be thrown out. Hence, the expert may be most helpful in making certain that although everything needed is included, everything which is not absolutely essential is omitted.

In the course of the preparation of the case there must be developed a complete feeling of rapport between the lawyer and the expert. Each is dependent upon the other. Each has for his objective the protection of the interest of their mutual client by the ascertainment of the truth and the presentation of the facts supporting the truth in the manner most favorable to him. There should arise during the preparation period a feeling of mutual respect and confidence. If this is not possible, the relationship should be terminated by one or the other, if the litigation has not progressed to the point where such termination will be harmful to the client. There should be an identification, one with the other. To use a hackneyed but expressive phrase, they must form a team with unity of purpose and a complete meeting of the minds.

Prepare Yourself for Trial

WHETHER you need to review your subject is for your determination, but remember that everyone cannot bear in mind every detail of his profession. No physician can remember every blood vessel. The jury won't understand this, and your failure to reply properly to some insignificant detail may damage your entire testimony. It may be wise to brush up.

Be sure that your testimony in this case will not conflict with what you have said in another. The opposing lawyer may have a transcript of your earlier testimony. Check any articles or books that you have written for inconsistencies and be able to explain them. This goes for associates and assistants, too. In a famous case one of the leading surgeons in Chicago, annoyed at being compelled to testify, gave his opinion in an over-confident, imperious manner that permitted no qualification or contradiction. On cross-examination he was first led to speak enthusiastically of the qualifications and abilities of his assistant, whom he admitted he left in full charge of his patients and practice while on his frequent absences from the city. He was then confronted with a written report made by this admittedly well-qualified colleague during a recent absence of the witness from the city concerning the same identical patient which was diametrically opposed to the opinion he

had just given. That surgeon can laugh about it now, but it finished him as a witness in that case.

The preparation of a case involving any type of testimony always involves a certain amount of advice from the lawyer to the witness with respect to courtroom decorum and the method of answering questions. The matter cannot be better expressed than has been done by the good friend and adviser of many of us, Dr. Carey P. McCord, in his article entitled, "Expert Testimony," in the February, 1953, issue of *Industrial Medicine and Surgery*. Anyone interested in expert testimony who has not yet read this article should do so at once, and every one who expects to testify as an expert or to examine an expert should return to it frequently. Since the present paper concerns the preparation before trial it would not be complete without some brief reference to this matter. I have the following incomplete list of suggestions for courtroom conduct:

1. *Tell the truth.* This requires no elaboration.

2. *Come prepared.* Refresh your recollection as to names, persons, dates, etc., beforehand. Bring your records or diaries to court with you, but read them first. Go over your texts or treatises. Avoid the danger which we have previously noted of being caught unprepared upon some unusual or insignficant detail of your profession.

3. *Do not be afraid.* The qualified, honest witness has nothing to fear. Assume a posture of confidence, but not over-confidence or arrogance. Do not permit yourself to be forced into an admission that it is not necessary to make.

4. *Be natural.* Do not talk down to the jury nor fawn upon the judge. Your testimony will be most effective if you appear to be an ordinary fellow like the rest of us, equipped with special knowledge and simple dignity.

5. *Be modest.* Nothing is more impressive. If you are an outstanding character that fact will soon enough reveal itself. As an expert witness you will be required to state your qualifications, and the lawyer will wish to make them as impressive as possible, but do not exaggerate. By all means confine your qualifications to your specialty and make them no broader than is necessary for the matter at hand. If you make yourself an expert in too many fields, your testimony may be entirely discredited by failure on cross-examination to answer some simple question in some field upon which you are not adequately prepared.

6. *Be frank.* Do not hesitate to admit a fact that is true just because it hurts you. Every case contains facts or theories which you or your lawyer will wish were otherwise. If your case has been properly prepared you and he will have anticipated most of these.

7. *Be attentive to questions.* Listen carefully. You cannot answer a question unless you understand it. Do not be afraid to request that it be repeated. Think in each case before you answer. Even those questions which you have gone over with your own lawyer may be changed in the excitement of the moment. Be certain of the correctness of your answer. If the hypothetical question is long and involved, ask to have it read back, or even reduced to writing and an opportunity afforded you to study it.

8. *Do not volunteer.* You are not upon the stand to make a speech. Say no more than is absolutely essential for the proper answer. The best test of whether you have properly prepared your lawyer is whether on cross-examination, when the opposing counsel has insisted upon answers to questions that have thoroughly confused the issue, you can feel confident that on re-direct examination your lawyer will clear it up. Wait for him to do so.

9. *Do not attempt to be an advocate.* Don't try to win the case. While your opinions as an expert may be the crux of the decision, present them as a scientist. Your lawyer has been hired to make the argument. You cannot do it for him from the witness stand.

10. *Do not be belligerent.* An attitude of antagonism to the other lawyer immediately brands your testimony as biased. Your task is not to show him up, but to present the truth. Give your testimony calmly and dispassionately.

11. *Do not lose your temper.* Certain lawyers will endeavor deliberately to make you do so, since this is one of the most effective means of confusing your thought and of making you appear incompetent.

12. *Be courteous.* The witness stand is no place for a smart aleck. No matter how absurd a question may be, answer it seriously. The folly of a question will more readily be exposed in this manner than by a show of your contempt for the ignorance or shortcomings of the questioner.

13. *Keep your voice up.* Your testimony is no use unless it is heard. A mumbling witness is an annoyance to, and tries the tempers of, the jury, the judge, the court stenographer, the lawyers, and everyone involved in the litigation.

Summary

IN SUMMARY, although the lawyer bears the ultimate responsibilty for the winning or losing of the lawsuit, in the preparation of the case for trial, in the realm of the expert's specialty, that responsibility in a large measure shifts to the expert. It is his duty to see that the lawyer receives a full education and to make suggestions as to evidence, theories to be developed, terminology, and even questions to be propounded. Lawyers, particularly trial lawyers, are individualists, sometimes prima donnas, just as are doctors, industrial hygienists, and nurses. Hence, the expert's approach may require some tact, and occasionally he will fail in conveying all that he wishes to the lawyer. But generally lawyers are eager to learn, and, in any event, it is the expert's duty to make the best attempt possible to inform the lawyer.

But when once in the courtroom you are on the lawyer's home ground. He then must be in absolute command. His position must be like that of the leading surgeon in the operating room. If he has requested and arranged for your presence in the courtroom during the trial, advise him in the manner he may have indicated by suggestions throughout the trial, but remember, he is in command and must make all of the decisions for better or for worse. The responsibility then is his, not yours. And if you have properly done your job of preparation, you need have no concern.

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Lead and Lead Poisoning in Early America

LEAD MINES AND LEAD POISONING

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This is the second of a series of nine items, the totality of which constitutes a substantial history of lead and lead poisoning in early America. The remaining items will appear in consecutive issues of this Journal. DR. MCCORD *is Consultant, Institute of Industrial Health, University of Michigan, Ann Arbor, Michigan.*

THIS country was explored in the quest for gold, but its eventual culture was founded on iron. This near quotation may be supplemented by the additive that neither was accomplished without lead. The first explorers arrived with lead bullets, while at the other extreme, as a single example, our well ordered lives are made more enjoyable by the entry of lead into the fuel of our motor vehicles.

The lamentable period of lead poisoning in this country, deriving from mining, lies just ahead of the period allocated to this historical series (1600, early colonial; 1850, United States). The years of tremendous plumbism from mining were 1870-1900 and the locus is Utah, New Mexico, and Colorado, not that these confines are exact. Lead in association with silver as this occurs in the mountain states of this country was first discovered in 1863 at Little Cottonwood Canyon in Utah. Quickly other deposits were located in Nevada, Colorado, Idaho, New Mexico, and Arizona.

In publications devoted to lead poisoning in the United States, scant attention is devoted to happenings prior to 1900. True, Alice Hamilton mentions the western mine difficulties, but the number of her exclamation points fails the occasion.

Richards, of Utah (1953), is the first sufficiently to present the lead poisoning havoc from silver-lead mining in the mountain West. From his book, "A History of American Mining," and unpublished notes omitted therefrom, these items are extracted:

"The following mines were the principal contributors of lead poison cases during the last century. If, according to best information available, only 10% of the 'lead' victims were sent to the hospitals, these eight mines poisoned about 9,000 miners."

Mine	Period	Hospital Admissions For Lead
Jordan	1875-1898	67
Spanish	1875-1898	69
Yosemite	1875-1899	69
Telegraph	1876-1898	206
Lead Mine	1877-1895	88
Brooklyn	1884-1892	249
Mayflower	1890-1892	63
Dalton	1893-1897	50
		870

". . . . The Eureka-Hill was producing in the early 70's, but the first 'lead' case was sent to St. Mark's Hospital in 1882."

". . . . During the next 20 years, 179 cases of lead poisoning were sent to Salt Lake. One doctor practicing in Eureka in the early days said, 'We sent about 5% of our lead poisonings to Salt Lake. The remainder we treat at home.' If his estimate is correct, the two mines (Bullion-Beck and Eureka-Hill) mentioned above poisoned over 6000 miners."

". . . . With the exception of the Bullion-Beck and Eureka-Hill there are no records of lead poisoning in the Tintic district. Old-timers say there was a 'tremendous number' of cases during the first two decades of the century."

". . . . Our hospital figures of lead poisoning do not begin to reflect the activity of the Park City district until the middle 80's. By that time the Ontario had reached depth and was working in rich lead ores similar to those of the Silver King and Daly West, so that the number of lead poisonings was fairly indicative of the amount of production of these three great bonanzas. Here is the summary of the admissions of 'lead' cases to the St. Mark's and Holy Cross Hospitals. (The figures end with 1903 because St. Mark's records subsequent to 1903 were destroyed by fire.)

Mine	Period	Hospital Admissions For Lead
Silver King	1885-1903	227
Daly West	1884-1903	201
Ontario	1884-1903	121

"According to Dr. William D. Donaher, who practiced in Park City in the 90's, less than 10% of the lead poisoning cases were sent to the Salt Lake Hospitals. If his estimate is correct, it means that the three mines poisoned about 5,500 workmen in 20 years."

It becomes possible that Utah alone, by the near turn of the century, struggled through as many as 30,000 cases of lead poisoning. This not necessarily means 30,000 persons, since "recurrence" was the rule.

Finally, Richards furnished the information that in one mine, remote to his locale, every mine tram mule died within the first year of employment from lead poisoning.

It might be speculated that mines of the Colonial period suffered similar evil experiences, hidden only because of the scantiness of medical writings. This is a *non sequitur*. Nothing comparable took place. The peculiar chemical nature of the mountain West has accounted for the difference. The dominant lead from there was the natural carbonate. Elsewhere, the prime form was the sulfide. True, the sulfide, like the carbonate, is reluctantly soluble, but the human body fends off the sulfide somewhat better.

The First Lead Mine, and Other Early Lead Mines

ONLY 14 years after the founding of the Virginia colony (1607), iron ore was being produced at Falling Creek near Jamestown. This operation was in the charge of John Berkely who had been sent over from England for this purpose and was accompanied by his son and 20 skilled workmen. Nearby petty outcroppings of lead were located and some lead was smelted. The following year the great massacre occurred in which the entire settlement of more than 300 was slain save for two children. The iron furnace was destroyed, and, by report, the source of lead was well concealed by hostile Indians. As it happened, the superintendent of that iron furnace had made the discovery of the vein of galena and worked it secretly, supplying only his neighbors. His cupidity and greed prompted him to hide the location of the vein, and when he was killed his secret died with him. The Indians well understood the importance of this material to the settlers and would not disclose the location of the deposit. Some years later, Colonel Byrd induced an Indian to reveal its position. The settlers at once took possession of this area and for many years the local need for lead was thus supplied. A somewhat different account is furnished by Robert Beverly ("History and Present State of Virginia," published in 1705) as soon to follow. It becomes the option of the reader to select what may be the more authentic. "The Superintendent of this Iron-Work had also discover'd a Vein of Lead Ore, which he kept private, and made use of it to furnish all the Neighbours with Bullets and Shot. But he being cut off with the rest, and the Secret not having been communicated, this Lead Mine could never after be found; til Colonel Byrd, some few Years ago, prevail'd with an Indian, under Pretence of Hunting, to give him a Sign, by dropping his Tomahawk at the Place (he not daring publickly to discover it, for fear of being murder'd.) The Sign was accordingly given, and the Company at that Time found several Pieces of good Lead Oar upon the Surface of the Ground, and mark'd the Trees thereabouts: Notwithstanding which, I know not by what Witchcraft it happens, but no Mortal to this Day could ever find that Place again, tho' it be upon part of the Colonel's own Possessions. And so it rests, till Time and thicker Settlements discover it."

In any event, 1621 marks the beginning of the white man's operations in lead in America.

The Massachusetts colonists were not sanguine as to the existence of precious metals in their domain, yet they did not neglect to encourage the search for minerals. The failure to find indications of the noble metals, or perhaps the disappointment occasioned by the discovery that minerals found by some ignorant adventures and asserted to contain gold proved to be common ores of iron, suggested to the Court of Assistants in London the propriety of sending over experienced miners and metallurgists to explore the country in a scientific manner. They accordingly engaged the services of Thomas Graves, "a man experienced in iron workes, in saltworkes, in measuring and surveying of lands, and in fortifications, in lead, copper, and alum mynes," to visit the Massachusetts colony, "and to exercise his scientific qualifications." In a report made in 1632 on the minerals of New England, lead ore and red lead are mentioned.

The first successful iron enterprise was at Saugus established by John Winthrop, Jr., in 1644. At that place existed a furnace, foundry and forge shop. This survived until 1675. One of the minor reasons for the dissolution of this first substantial industry in the colonies derives from the fact that some of its operating executives were thoroughly engrossed in a chimerical lead deposit near Easton, Maassachusetts, and other places. Better reasons for the disappearance of this historical factory were the exhaustion of the easily available bog ore (limonite) and the depletion of neighborhood fuel wood ravenously consumed in iron smelting. And so in 1651, John Winthrop, onetime governor of the Connecticut colony, was granted the right to mine lead in Middletown in that colony.

In 1740 at Northeast in Dutchess County in New York, lead ore was mined but was sent to England and Holland for refinement. And again a news item in the *New York Gazette*, March 26, 1750, announces:

"As we have but little material Intelligence to present our Readers with this week; we hope it will not be disagreeable, to inform them, that we have been credibly assured that a valuable lead Mine was lately discovered in Dutchess County, in this Province; and that some of the Ore having been tried, yielded in the Proportion of three Quarters of a Pound of fine Lead, to a Pound of Ore: 'Tis said, it lies in great Quantities near the surface of the Earth, and that the Owners of the Land are resolved to set about the improving it with all possible Diligence; so we hope

it may turn out to their, as well as the Country's Advantage." (Gottesman.)

About 1750, a British Army Officer, Colonel Cheswell, reported the discovery of lead along the New River in Virginia. In 1756, that officer established Fort Cheswell, named for himself, to protect miners. Proudly he announced his feat to a King's Council at Richmond. He was amazed to have his word challenged and promptly murdered his doubting colleague. Still, lead produced there contributed to the success of the American Revolution. This may have been the first prolonged lead mining enterprise.

In Southampton, Massachusetts, as well as at Worcester in that colony, lead ore was known to exist and some was mined at Worcester. The Southampton deposit was developed in 1765, but work was discontinued during the Revolution at the very time that lead was needed. During the year 1767 when Clinton was governor of New York, he arranged the leasing of a silver-lead mine to one Frederick Philipse. The lead portion of this deposit was galena, which fact is of some importance to lead poisoning, since that form has proved less dangerous than some other lead ores. Near the beginning of the Revolution, a lead refinery was established at Sing Sing, New York, but the major operation there may have centered about iron.

In spite of the availability of lead ores in many localities of the colonies, from Maine to North Carolina, metallic lead scarcely was produced. Instead with the first rumblings of the impending Revolution being heard, a leaden equestrian statue in Connecticut, erected in honor of George III in 1770, was pulled down and turned into 42,000 bullets.

In 1777, the Colonial Congress urged the development of the New York lead deposits and allocated prisoners of war for labor purposes. At that time the most promising lead deposit was the Livingston mine at Ancram.

During this period lead ore was known to exist near Unionville in Maryland. It is not known that this deposit led to real production.

In December, 1775, a grant of £200 was made to Frederick Gaunt for the development of a lead mine in Fredericktown mountains in Maryland.

A frantic committee of the Colonial Congress set about the procurement of lead throughout the colonies. They besought the services of a German named Fedaband, skilled in smelting and refining, but determined that he was of Tory learnings and thus untrusted. At this time workings were developed in Fincastle and on the Great Kanawha River in Virginia. Some idea of the volume of production may be gained from the record that these two mines did not turn out more than 25 tons of lead in any one year.

In 1778 Colonel Roberdeau constructed a fort near Sinking Spring, Pennsylvania, to safeguard the mining and smelting of lead for Pennsylvania. The flooding of that mine and the unsuccessful combating of nearby Indians resulted in no production of lead. During the scarcity of lead in 1778, General Armstrong advised President Wharton of the Pennsylvania Assembly that Mr. Husbands, a member of the Assembly, had knowledge of lead deposits near Frankstown in Pennsylvania and urged an investigation.

As the Revolutionary War progressed, the supplies of lead became exhausted. The puny mines failed. Recourse was then had to the leaden cooking utensils—roofs, gutters, and spouts. Traditions of Cambridge, Massachusetts, state that during the siege of Boston, the pewter organ pipes of the old church and the leaden coats of arms from gravestones in the churchyard were cast into bullets.

During colonial times, the chief lead mines, but still on a comparatively petty scale, were the Washington mine in Davidson County, North Carolina, and the Rossie mine in St. Lawrence County, New York, together with those already mentioned in Connecticut and Massachusetts.

All told, there is abundant evidence of need for lead by the colonists and the willingness to explore every possible deposit that became known to them. The truth is that the small deposits—usually surface outcroppings—were hardly worth development. It is no wonder that the majority of these lead mining operations failed. The major deposits of the Atlantic coast states did not come to light for generations. The real locus of lead, that in the Mississippi Valley and in the mountains West, in the early colonial period might as well have been in a foreign land. In fact, it was a foreign land up until the time of the Louisiana Purchase.

The major objective in this historical series is not lead *per se*, but lead poisoning. Scarcely an iota of information on lead poisoning is associated with any of these reports on Colonial American mines. Sir William Osler, in his monumental "The Principles and Practice of Medicine," in the section on lead poisoning, introduces this statement:

"Miners usually escape, but those engaged in the smelting of lead ores are often attacked. Animals in the neighborhood of smelting furnaces have suffered with the disease and even the birds that feed on the berries in the neighborhood may be affected."

Sir William was only partially accurate. It was during his period that the holocaust of lead poisoning among miners occurred in the Rocky Mountain states. He could have known of this occurrence. It may be that birds did acquire lead poisoning, but probably not from eating berries. Rather it may be surmised that lead particles taken into the crops of birds as an essential part of their digestive economy were the source, or, more likely, the breathing of leaden vapors.

It is established that miners of galena ore, the type that seemed to have dominated the Colonial area deposits, seldom became involved in lead poisoning, but the smelters of that ore were not equally assured of escape. Throughout this re-

cital, the most nearly positive assertion as to lead poisoning relates to the practice of the patriots during the Revolutionary War in contributing their lead roofs, gutters, downspouts, and household utensils for bullet purposes. This consideration belongs not to lead mining, but to other sections dedicated to the lead pipe period and the pewter era.

The petty "diggings" of lead in the period of the original Colonies provide no known medical records of lead poisoning. Writing euphemistically, it is observed that since lead is a prime source of infertility, being a race poison, maybe the victims, if any, begot no descendents later to delve into the diseases of their Colonial ancestors.

Mississippi Valley Lead

WHEN Chicago still was but a wild onion patch, known widely as Fort Dearborn and sometimes designated by its Indian name Checagou, a Westward sister community was thriving. This was Fever River, a community and a district. The year is about 1828. The lead miners went about reading the *Miner's Journal*, while Chicago waited until 1833 to look over the pages of Vol. 1, No. 1 of its *Chicago Democrat*. Some anlage of a chamber of commerce, sensing the poor public relations in a name like "Fever River," rose in dissent when the post office was so named. A feeble few protested that "fever" was but a violation of the French "feve," meaning bean. To no avail—Fever River became "Galena." Appropriately so since Galena means "lead" The story of Galena is an epitome of early Mississippi Valley lead, reaching far behind its name into the real colonial period.

So many pioneering Frenchmen wended their way up and down the Mississippi River and its tributaries that it may not be possible precisely to identify the white man who first observed lead on the shores of these rivers. Galena lead sulfide, which was the plentiful mineral around, so resembles metallic lead in its outcroppings, that few could fail to identify it. Presumably the first explorer was the discoverer. Both glory and lead were aplenty for all.

Avoiding the categorical, it appears that Robert de La Salle, with whom journeyed Louis Hennepin, may have been the first to observe Mississippi lead *in situ*. La Salle completed his journey down the Mississippi in April, 1682. Father Hennepin's map of 1687 locates a lead mine near the mouth of the Fever River. If there were a mine to be mapped, someone previously had done the mining, but maybe the miners were Indians.

A little more definiteness attends the pioneer miner of Mississippi Valley lead. This was Nicholas Perrot. He first saw lead in the form of a lump handed him by a Miami chief in 1690 at Green Bay. The chief furnished Perrot the source of the mineral, so down the rivers he started, and there he found lead, just as promised, on the banks of the Mississippi. Mining the lead was not easy. It was laminated with hard rock. Already the Indians had done some digging, and Perrot taught them little better methods, but still relying on buffalo and deer horns for picks. A few discarded gun barrels completed the machinery of digging. The smelting facilities were just as primitive. Most of the work was done by squaws who toted the broken ore in birch-bark baskets or buffalo hide panniers to a crude furnace of logs laid on a slope. Holes were scooped into the earth and heat from the wood fire transformed some of the sulfide into metallic lead. This dribbled down through earthen channels into brick size pockets. The yield was about 50% which still is remarkable. Perrot's trading post was on the Illinois side of the river opposite the site of present-day Dubuque.

In 1699 Le Sueur made the upward journey from the mouth of the Mississippi dedicated to an examination of the lead mines along the upper stretches of the that river in behalf of the French king. That sounds like a major program, the implication being of many lead mines in the the area. Actually he only worked over some ore in the now deserted Perrot mine and further up near Potosi in Wisconsin. All considered, the exploration was a sorry affair. Le Sueur went back to France without much lead and with mighty little information.

Philip Renault was the ambitious one. He set out from France with 200 artisans and miners supplied perhaps with the first real hand tools for mining. His journey was to New Orleans as a starting point, but on the way at the island of Santo Domingo, he purchased 500 negro slaves for working the mines. His first objective was Kaskaskia, a territory far below the present city of St. Louis. Renault hoped to determine that the abundent lead was associated with silver. One of the party, Sieur de Lochon, was a skilled metallurgist and he set about the task of separating the two metals. The concept was brilliant, but the result was futile in that no silver was present—or only traces. Sadly Renault resigned himself to the procurement of the baser metal, lead. He established a pack horse train system for the transport of his lead to New Orleans for shipment to France. This form of transportation is amazing, since there at hand was the navigable Mississippi River with endless timber for barges. Still Renault prospered until the Indians crippled his operation. In 1742 he gave up his fight, taking his workmen with him but selling his slaves before his departure.

In apprehension that this mention of so many mines be laid aside as fictitious, permit the pontifical "Missouri Bureau of Geology and Mines" (1930) to make its own reference to Renault:

"The early history of the area now comprised in Washington County is essentially a history of the development of lead mining in the State. Accurate information, involving exact dates, is difficult to secure, but it would seem that the first

discovery of lead in Missouri was on the Meramec, in the year 1700, and the first serious effort at mining occurred at the same locality about 1719. The Mine La Motte deposits, in Madison County, are believed to have been discovered about 1720. Old Mine and Mine Renault, the latter named after Philip Francis Renault, the French explorer, are said to have been opened between 1724 and 1726, and therefore rank as among the very oldest mines in the state, if not in the entire Mississippi Valley. A portion of the original grant at Old Mine is included in the area of the Potosi quadrangle. For several years, mining was pushed vigorously, but with subsequent failure of the company backing the enterprise, Renault returned to France in 1742, and the industry languished."

Beginning with Renault's arrival in 1720, there was a century of desultory lead mining. Lead was everywhere—Wisconsin, Illinois, Iowa, Missouri, Arkansas. Alternately the braves fought off the miners and sent in their own squaws to aid in the mining. Small pox appeared. In due course river boats arrived. Transportation was the great difficulty. Some lead was smelted in the form of horse collars and strung on the necks of horses for transport. Some lead, smelted in form of bricks, was equipped with a hole simply procured by driving wooden stobs into the earthen mold. Such lead was strung like a giant necklace on horses. Some lead was shipped by water—first by way of the inland rivers then the Great Lakes to eastern markets. Highjacking of mines was common. In this period the United States was formed, then came the Louisiana Purchase. The government undertook to regulate mining operations through the instrument of license. Regulating agents were appointed. No one paid much attention to the governmental strictures. The price of lead was as low as three cents per pound—still mining continued.

The master miner of the period was the French Canadian, Julien Dubuque. He knew how to get along with the Indians. He knew how to mine lead. He knew how to sell goods. The present city bearing his name marks his territory. In 1774 Dubuque arrived. He exercised good judgment in marrying an Indian Chief's daughter. Under Indian protection and with their assistance, he conducted mining operations on both sides of the Mississippi. At a formal council of the Sauk and Fox Indians held at Prairie du Chien in 1788, all concessions that could be granted by the Indians were vested in him. Carondelet, the French governor of Louisiana, confirmed the arrangement. The mines on the west side of the Mississippi alone yielded some 30,000 ingots of lead annually. He amassed riches from lead, furs, and merchandise. St. Louis was his market for everything. He was the first "lead lord" of the territory. He died in 1810 and by his Indian friends was buried in sorrow and a leaden coffin. Then for a period the semblance of order disappeared.

All along the Fever River, with its nearby lead deposits, had been a minor center, but in the 1820's the newly named Galena became a place of stirring enterprise. Thereabouts were some 2,300 lead miners. The first mineral rush to the west had begun. Immigrants poured in from everywhere. Galena became the undisputed entrepot for the lead traffic. St. Louis, 400 miles to the south, was no local competitor. Fort Snelling, 300 miles northward, scarcely was settled. Galena was queen. Surrounding Galena, the mining population was near 10,000. In one year (1844) the district produced 192,000,000 pounds of lead. The lead era was on; eventually supremacy was lost to Galena and to Illinois. Missouri became the capital of the lead world.

So much for lead deposits and lead mines in the Mississippi Valley. But, what of lead poisoning itself? All along this recital has insisted that since the chief ore of the eastern half of the United States is the sulfide, i.e., galena, lead poisoning, while possible, was unexpectable. That estimate is upset by an ancient publication in the *St. Louis Medical and Surgical Journal* for the year 1848. Therein Dr. S. Skeel, pursuing the topic "Lead Colic, or Mine Sickness," mentioned "more than a hundred cases of this disease" and furnished some case histories. Let the good physician plead his own case:

"There is another class of individuals, who are continually receiving (lead) into the system by every possible means, but, probably, in a less active form, but it is no less sure to lay the foundation of this disease. It is the miner, the digger and cleaner of mineral: he is handling it, he is inhaling it, and the flying particles mingling with the saliva, he is swallowing a considerable portion of it; consequently, he is more obnoxious to this complaint, in all its varied forms, than any other class of persons; and it is with this latter class, that the symptoms are more variable, the cause, notwithstanding he is a miner, more obscure, and less likely, in many instances, to be suspected by the practitioner. But our present purpose is only to deal with the symptoms and plan of treatment, circumstances having placed us, for the last ten years, in a part of the country where we have had frequent opportunities of witnessing the effects produced on the human system, by the action of lead, we have taken great pains to ascertain its nature, and the best plan of treatment, adapted to particular cases, of which we can speak with some degree of confidence" . . . .

"—September 19, 1838. Was called in the night to visit E. B. Harris, an overseer in Valle's mines, aged 45 years, sanguineous temperament, plethoric, been three days sick, pulse slow and full, tongue white, pain, (to use his own words) in the stomach, belly, back and collar-bones; no vomiting and but little sick stomach, obstinate constipation, great thirst, but drinks but little, and that warm sage tea. It is mine sickness, (has) had the disease before, two years ago. Upon enquiring what he had done for himself, said, I have taken a half ounce of calomel, and a pint and a half of

castor oil; have given myself about a hundred injections (enemas), and gone into the warm bath, which is the only thing that gives me any ease, but I cannot bear it more than a half minute, without fainting. Such was the condition of my patient. I drew 16 ounces of blood from the arm, which quickened the pulse; dissolved three ounces of epsom salts in a quart of cold spring water, put him in the warm bath, and gave him the solution to drink, which he took at two draughts, and had to hurry out of the bath to stool, left him a combination of blue pills, quinine and rhubarb, and in six days he was attending to his business" . . . .

"—October 10, 1840. I was called to a negro man belonging to J. B. Valle, a miner, aged 30 years, been sick three days, symptoms as above, with violent retching and considerable vomiting, spinal irritation, the lightest touch on the dorsal portion of the spine causing him to cry out with pain; a general tenderness pervading the whole system. —Had taken 60 grains of calomel and several doses of castor oil, but vomiting the latter almost as soon as taken. I applied a mustard plaster to the stomach, and gave him three grains of act. morphia, prohibited all drinks and in ten minutes gave him four drops of croton oil, in a little mucilage of slippery elm. Twenty minutes elapsed with but one effort to vomit, and no disposition to stool. Gave two more drops of croton oil, and directed enema of castor oil and spirits of turpentine, which operated in ten minutes with great promptitude and efficacy. My patient was relieved. I directed ten grains of blue pills and ten of rhubarb every night for three successive nights, followed for a week after with elixir vitriol and quinine three times a day, and in two weeks, my patient was again cleaning mineral."

"Some few days after, at the house of Mr. John Perkins, in the neighborhood of Perry's mines, I was asked to look at a negro man, who had been troubled with bowel complaint, and rheumatism, (as they said). I found the symptoms as above, only more aggravated, a greater degree of spinal irritation, and both wrists swollen. From reflecting on the former case, I had come to the conclusion that the disease must be caused by mineral; that the action on the bowels was, probably, kept up by particles of mineral acting mechanically on the alimentary canal, and my plan of practice was based upon those views. I gave him that night ten grs. of blue mass and three grs. of opium, which relieved the pain and procured rest. In the morning I gave him two drops of croton, and one ounce of castor oil, left him and returned about 11 o'clock the same day. The medicine had operated freely. Mr. Perkins went with me to see the discharges, which were completely filled with particles of mineral. The negro himself, said he had passed his two hands full."

While some disbelief attends the doctor's statement that two hands full of lead particles were discharged in a single bowel movement, the doctor must have been starkly honest and humble, since his publication ends with a statement that well might be heeded by all writers. He said:

"I have already written much more than I had intended at the beginning."

In seriousness are these old records appraised. Two considerations arise. If indeed the excrement discharged contained visible quantities of lead, it becomes apparent that gross exposure occurred —too much even of galena, for the body to accept without colicky response. More importantly, it is now known that some portions of the Missouri galena deposits are accompanied by a sparse constituency of lead carbonate, cerussite. Thus is the very form that later on produced the catastrophies in western states. Without quibbling, Dr. Skeel, of Jefferson County, Missouri, living right down in the lead country, presents information of a high incidence of lead poisoning among Mississippi Valley miners within the period encompassed by this present report.

Mixing history and mineralogy, three territories becomes important to this present recital: The mines of the Atlantic colonies which are of consequence only as marking the beginnings; the Mississippi Valley, the land of lead abundance, both in colonial generations and now; the mountain states of the west, prolific in lead production for half a century, here notable as the situation of veritable scourges of lead poisoning among miners.

Mixing history and toxicology, it becomes possible almost to provide the dictum, "Mining lead sulfide, expect little lead poisoning; mining lead carbonate, expect a spate of lead poisoning." This, of course, in the absence of suitable protective measures, and in the early days, there was none. Colonial America was not ravaged by lead poisoning from lead mining—that came later.

Subconscious

THE mind that is capable of any constructive thought at all performs some of its most spectacular feats when it is apparently idle—when it is daydreaming and at ease, or seems to be registering only what the eyes take in as they watch the motions of the hands in the performance of some physical task. It is why, for brain workers, there are fat dividends in the relaxation that comes from recreation, from hobbies, and from pure idleness.

—From "On the Function of Doing Nothing," Editorial in *New England J. Med.*, September 24, 1953.

President's Page

OVER the years, Committees have been the targets of many caustic barbs and satirical epithets, hurled in criticism of the lethargy that frequently seems to characterize their activities. While on occasion such criticism may be justified, for the most part Committees function both efficiently and effectively. It should be remembered that in a voluntary organization such as ours, the Officers, Directors, Committeemen, and Counselors contribute their efforts entirely as a labor of love and without financial remuneration. Since the major share of each individual's day must be devoted to his principal means of livelihood, the time available for such extracurricular activity necessarily is limited. The establishment of Committees to consider specific problems, therefore, is a practical method for the dispersal of work that in the aggregate would be too great for any one small group of individuals to cope with effectively.

The Committees of the Industrial Medical Association fall within four general classifications —the Administrative and Policy Committees; the Scientific Committees; the Awards Committees; and the Special Committees.

The Administrative and Policy Committees, as their name implies, deal with those broad general subjects that influence the attitude and policy of the Association in its relations with its own membership; with other professional organizations; with non-professional organizations and agencies both private and governmental; and with the public in general.

The Scientific Committees are concerned with technical problems and developments in their respective specialty fields. They analyze and interpret new technical developments and provide orientation for the membership regarding their significance. They act as consultants in the development of the scientific program for the Annual Meeting, making recommendations for the program content as well as participating in the program itself.

The Awards Committees have the responsibility of selecting individuals to receive the four Awards that are bestowed each year by the Association at its Annual Meeting. A separate committee is established for each Award and its deliberations and the final selection of the recipient are accomplished without outside influence of any kind.

The Special Committees consist of those that do not fall naturally under one of the other three classifications. The Nominating Committee, for example, is a special committee in that its existence is mandatory under the By-Laws which specifically state that this Committee be comprised of six members, three of whom shall be Presidents of Component Societies and three of whom shall be Fellows at Large. Committees that are created from time to time by vote of the Directors also fall into this category, since they usually are assigned one special task, and they automatically cease to exist when that task has been accomplished.

THE Association also is engaged in various activities in conjunction with other professional organizations, through the medium of joint committees. Participation of the Association in formal joint committee effort requires authorization of the Directors in each instance. Insofar as possible, representation on joint committees is provided from the membership of one or more of the appropriate standing committees of the Association.

Under the existing By-Laws, all Committees cease to exist at the time of the Annual Meeting. Accordingly, with the exception of those Committees required by the By-Laws or requiring specific authorization of the Directors, Committees are appointed each year at the discretion of the President. This provision of the By-Laws offers a diplomatic method for the discontinuance of Committees that have outlived their usefulness or for which a need no longer exists. However it also is recognized that many Committees are dealing with matters that require prolonged activity in excess of one year. To provide encouragement for such long-range planning, Committees are appointed by the President only after consultation with and agreement from the entire Executive Committee. A reasonable degree of assurance of continuity in office thereby is afforded Committee members.

Although all Committees ultimately report to the Directors of the Association, there is some variation in the *modus operandi*. The Administrative and Policy Committees have liaison with the Association through the Second Vice-President who is responsible for general supervision of their activities. The Scientific Committees operate under the supervision of the General Scientific Committee Chairman, who in turn reports to the Association through the Second Vice-President. The Awards Committees and the Special Committees report directly to the President and Directors without the use of intermediary channels.

George F. Wilkins M.D.

Industrial Medical Association

The District Counselors

THE I.M.A. has its officers and its Board of Directors. Without them scarcely would there be any I.M.A. Few of the members fully are apprised of the endless duties, services, and travels imposed on that group. Notwithstanding this reliance and dependence upon the officers and directors, in a just sense it may be urged that the organizational backbone of I.M.A. resides in its 32 District Counselors. They are the ambassadors, the field generals, the spokesmen, the pulsetakers—in general just what they are named, "Counselors." The presentation of the Counselors' photographs is insufficient recognition of their services to the Association, but unfailingly these photographs in themselves reveal the high character and dignity of that group of members who serve the I.M.A. through their close identification with occupational health in far and near places. (See page 543 for areas included in each district.)

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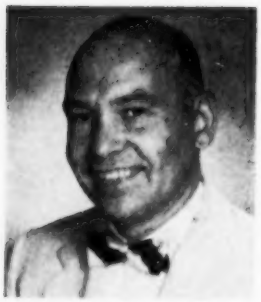
Industrial Medical Association



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Association News

Our Privilege

ALL OF US have attended meetings where an enthusiastic Master of Ceremonies has started the program off with a hearty word of welcome. Then he has said "Let's all get acquainted." You turned to the neighbor on the right, shook hands and identified yourself. Then you turned to the person on the left and repeated the gesture. I am sure that once we knew our neighbor, we felt closer communion and enjoyed the program much more.

The Membership Committee of the Industrial Medical Association desires to sponsor a similar program for 1954. First of all, if you are a Medical Director supervising other industrial physicians, check your own roster and assure yourself that all of your own doctors are members. They will do a better job and have a deeper understanding if you do. Then let's check the Industrial Medical Committee of the local Academy of Medicine. Are they members? They should be if they are going to have a general view of industrial medicine. Lastly, let's check up on those in the community we know are practicing industrial medicine, full time or part time. Invite them to join with us and share our interests.

Don't forget the dermatologist, the ophthalmologist, the orthopedic surgeon and others who are constantly in consultation on industrial medicine and surgery. Even if they are not actively engaged with a particular industry, they should be interested. Here we recommend an Associate Membership which meets their qualifications and satisfies their interest.

We need them all and they need us if we are to develop better industrial health planning and see the results of new contacts and ideas.

—CHARLES F. SHOOK, M.D.,
Chairman.

THE Annual Meeting of the TERRITORIAL ASSOCIATION OF PLANTATION PHYSICIANS will be held on the island of Molokai, November 13-14-15. There will be a series of round tables on some one or more panels of which every plantation doctor will take a part. Subjects to be discussed are as follows: (1) The industrial medical plan. (2) Industrial accidents and the "free choice of physician." (3) The rehabilitation program, including the aging process among plantation workers. Possibly this will involve a discussion of vitamins, hormones and antibiotics. (4) Is the maintenance of good health for the worker as much a part of management's responsibility as the maintenance of the industrial implements used in order to assure a successful and efficient business? (5) Present problems in public relations. (6) The problems of proper birth spacing to insure healthier family life. (7) The annual physical examination. (8) Problems in the use of commercial toxic agents.

Letters

"Fasten Your Belt"

TO THE EDITOR: These lines are written on approximately the anniversary of an unmeasurable loss to industrial medicine, the death of DR. FENN POOLE. As most of the readers of this journal know, he had flown to Los Angeles from Seattle. During his lifetime he had flown untold miles over this country and Europe without an accident. On one of these occasions I was sitting with him. The air got a bit turbulent and before the warning sign was flashed in the plane FENN said to me, "let's fasten our belts."

After another safe ride in the air he drove from the airport only to be killed a few blocks away *by his own car*. The facts are these. The impact of the other car striking his caused the door to fly open. FENN was thrown to the ground and his head was injured by his own rear wheel.

This type of death is not unusual. Newspaper photographs indicate that death from an automobile accident frequently results from the occupant being thrown from his own car even though his car had not overturned.

Safety belts would seem to be the answer. Admittedly those who scorn all safety precautions would consider safety belts a nuisance. Let them do so. But the majority of riders, especially those indoctrinated to their use because of air travel experience, would welcome this innovation in automobile equipment.

Every Medical Director of our automobile manufacturing plants knew and loved FENN POOLE. As a memorial to him these Medical Directors should "sit in" with the designers of future models of automobiles to insist that safety belts be a component of every car. —RUTHERFORD T. JOHNSTONE, M.D.

Plant Visits

TO THE EDITOR: The Joint Committee of the American Academy of General Practice and the Industrial Medical Association, working with the Council on Industrial Health of the AMA, is ever alert to new ways and means of assisting the general practitioner in that portion of his work related to industry. Industry is aware of this need for a closer understanding and has demonstrated it in many ways. Every plant naturally has its own approach. The Muncie, Indiana, plant of the Kimble Glass Company has a unique way of meeting and educating the local professional people. They invite the doctors individually to be their guest for lunch and to take a tour of the plant and the Medical Service. The plant manager and his staff stress the local health, hygiene and safety problems and demonstrate the means used to locate and combat all such hazards. These meetings also are wonderful opportunities to bring up necessary absenteeism. The Muncie plant reports a good measure of success with this plan and feels that the courtesy is appreciated by the busy doctor. He especially enjoys the informal nature of the visit. This means of communication might well be tried by small plants and even larger plants where plant trips by groups of doctors would be impossible. —C. F. SHOOK, M.D.,
Medical Director,
Owens-Illinois Glass Company,
Toledo 1, Ohio

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Dr. Frank Ferlaino

REVERED in Canada's Province of Quebec is Ste. Emelie. Rarely is she mentioned apart from her chief appellation—"The Energetic." In strikingly appropriate fashion that same appellation designates the late Frank Ferlaino whose formal obituary elsewhere appears in the Journal. As an Associate Editor of this Journal, Dr. Ferlaino without debate was the most diligent of all. Scarcely a day passed without some communication from him—a clipping, a reference to a forthcoming meeting, a procured manuscript. While some other industrial physician cautiously might be planning an enterprise, Dr. Ferlaino was completing a dozen. He was no starter of projects only to abandon them next week or next month. He brought nearly all "to pass." No one with reason might level off at him with charges of indolence or impassivity. Those words were scratched out of his dictionary of life. Everything yielded to his diligence.

If New York had not existed as a city, it would have been necessary to have created such a locus for Dr. Ferlaino's operations. Over and over it has been said, and by ardent admirers, that as an industrial physician, Dr. Ferlaino would have failed miserably in such states as Kansas or Minnesota. Only cities like New York could have served as his stage. His tempo left sparks. Energy and diligence are not synonyms of ambition, but ambition could stir both. Not so for Dr. Ferlaino. His enemies, had he some, avoided all reference to any "self-seeking." He did not plough deep while the sluggard slept that he might have corn in abundance to sell and to keep. His objective always the "cause"; of causes Dr. Ferlaino carried the burden of all too many.

Whence came this endless self-prodding, this striving? No man finally may say, but there it was, teeming in body and in soul. If eagerness and energy are to be accepted as virtues, then Dr. Frank Ferlaino, the industrial physician and the industrial medical editor, is to be hailed as of virtue. This Journal, pained by this catastrophe, without constraint acknowledges the contributions of a valiant, able associate.

Non-Occupational Silicosis

THE highest echelon in the detection of diseases is the "diagnostician." The gadfly always about is the "suspectitioner." This "gadfly" has long suspected—and not without a modicum of proof—that in most adults coming to autopsy, there might be found a few typical silicotic nodules in pulmonary tissue in the absence of any occupational exposure to siliceous dust. Such a finding might have no bearing on the cause of death nor upon the health of the autopsy examinee during his life. Contrawise, such a finding could have enormous diagnostic repercussions in the instance of a workman mildly exposed to silica dust fully insufficient to have produced a clinical pneumoconiosis. In fine, the detection of a few silicotic nodules in any individual in itself never justifies the diagnosis by the pathologist of a significant silicosis.

Charles L. Sutherland, writing on this subject in the *Transactions of the Association of Industrial Medical Officers* of Great Britain (January, 1953), includes this language:

"Industrial diseases and poisonings, for example, lead poisoning, can occur alike in indus-

try and in ordinary life. But if the question be asked: 'Can pneumoconiosis occur apart from an occupational risk?' the answer must be 'No.'

"The reason for this negative reply is simply that the conditions favoring the inhalation of a dangerous quantity of dust occur only in industry. What are these conditions? They are essentially an enclosed or poorly ventilated working space in which there is a dust cloud of particles of respirable size and in sufficient density. The size of particles which can penetrate most easily to the alveoli and the lymphatics of the lung, ranges from five microns down to 0.2 microns or smaller. Particles of this size also remain airborne for the longest time. The density of the dust cloud can be measured by various instruments and the result compared with estimations of 'safe concentrations' or 'approved dust conditions.' The safe concentrations will vary according to the composition of the dust, and in saying this we are reminded that the respiratory system has very efficient defences against intruding particles. A further point, however, is that dust may be dangerous and yet invisible to the unaided eye.

"The answer already given is quite correct if by pneumoconiosis is meant a disease, implying by that, at the least, a disturbance of function. Now pathologists are not surprised to find anything in the lungs from dentures to diatoms, and dust of some kind or other is a usual finding especially in town dwellers. The mere presence of dust in the lung does not constitute a disease but even where there is no occupational risk, this dust may in the course of time produce some changes. Pathologists are persons with inquisitive minds.

"Drs. J. Davson and W. Susman, two Manchester pathologists, in 1937, examined the apparently healthy lungs of 94 people of all ages. In none of the cases was there an occupational risk of silicosis. Their conclusions, for which they give good and sufficient reasons, are that except in infants no lung is wholly free from anthracotic matter. Siliceous matter is present along with carbon and is co-extensive with it. The aggregation of siliceous matter is always greatest at the apices and increases steadily with age; in places it may be present in amounts comparable with those in generalized silicosis.

"They found in 46 cases apical scars of the type commonly attributed to tuberculosis. In their view, however, the tuberculous origin could only be proved in six, in the remaining 40 the scars were due to the accumulation of siliceous matter at the apex. In eight of these 40 scars unequivocal silicotic nodules were seen, while in three cases, silicotic nodules were found in the subapical pleura apart from the scars. Drs. Davson and Susman formed the opinion that these lesions are caused by the inhalation especially by town dwellers of smoke containing carbon and ash from domestic and industrial fires, and of dust from tarred roads.

"Their observations as to the amount of siliceous matter confirms the statement of T. Belt and E. J. King, in 1934, in the *Canadian Medical Association Journal*, that as much silica may be present in the lymph nodes of town dwellers as there is in the lungs of silicotics.

"The earlier reports of the South African Miners' Phthisis Bureau, issued when the late Dr. W. Watkins-Pitchford was Chairman, laid it down that the postmortem diagnosis of silicosis must be made by the naked eye and not by the microscope. The reason was that among the general population of the Transvaal many persons showed microscopic evidence of silicosis.

"Professor M. J. Stewart reminds us that the mere finding of a few or even a number of discrete silicotic nodules in the lungs may have little or no significance so far as the health or even the death of the patient is concerned. These lesions may be non-progressive, completely encapsulated and closed. The silicotic apical scars of Davson and Susman belong to this 'subclinical' type of silicosis. Quiescent 'closed' lesions are found not infrequently in town dwellers and may be met with, he says, in such persons as women employed wholly in domestic duties, who have never been exposed to any recognizable dust hazard.

"Dr. A. I. G. McLaughlin also thinks silicotic nodules may be found in the lungs of housewives who use dry siliceous soap powders. He anticipates that they may be found in maids of hotels where much use is made of these powders in cleaning baths, etc. But under these circumstances, silicosis can scarcely be regarded as non-occupational."

"[illegible] greatly reduced"*

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If you wish to apply for membership in the INDUSTRIAL MEDICAL ASSOCIATION, please fill in, tear out, and mail to the District Counselor nearest you, as shown on the reverse side of this card.

Date_____

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Signed_____

Address_____

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An objective of the study was to relieve pain sufficiently to reduce lost time and "still maintain a safe and efficient employe both on the job and while driving home." Not only was Phenaphen found "satisfactory for everyday industrial use," but "the amount of lost time . . . was greatly reduced." It was also concluded that: "Because of the complete absence of side effects, it is justifiable to increase the medication to two tablets every four hours."

*New York St. J. Med. 53:1867, 1953.

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1. *Vivino, A.E. and Ritter, G.: M. Ann. District of Columbia, 22:117 (Mar.) 1953.*
2. *Boines, G.J. and Horaschak, S.: Delaware State M.J., 23:183, 1951.*
3. *Boines, G.J.: Med. Times, 81:50, 1953.*

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News, Comment, Opinion

AT ABOUT the time the National Safety Council was organized, accidents in industry were attributable 85% to physical causes, such as relating to the environment, and only 15% to what has been termed "the human element." Such has been the progress since that time that the ratio today is almost exactly reversed.

—W. H. SEYMOUR, Vice-President, Liberty Mutual Insurance Company.

Small Business

THE small businessman is not really so small. In the aggregate he is a powerful giant, for the United States is a country of small businesses. Though some people would have us believe that a few predatory corporations have the country in their tentacles, there are actually only 3,300 corporations in the United States employing more than 1,000 persons. There are three million enterprises employing fewer than 100. These are the real makers of prosperity.

—*Management Review*, July, 1953.

Stenographer's Disease

OSTEOPATHS will tell you confidently that their office rents and other overhead are paid each month by treating what they term "stenographers' disease." Now, stenographers' disease is not what you think. It has nothing to do with staying up late at night, going to dances, too many frozen Daiquiri's, inadequate lunches, or nervous tension caused by a surly boss. Stenographers' disease should be called posture "-itis." It is the result of one of several things: (1) the wrong chair; (2) improper posture in a good chair; (3) faulty relationship between chair and desk height.

—*American Business*, August, 1953; in *Office Executive*, October, 1953.

Alcoa

ALUMINUM Company of America dedicated its 410-foot, 30-story, Alcoa Building in the heart of Pittsburgh's Golden Triangle September 15, 1953—America's first aluminum skyscraper. "Located on the fifteenth floor—midway point for the two elevator banks, and thus the most accessible floor of the building—is the Medical Department. Almost a hospital in itself, its elaborate layout includes a reception room, treatment dispensary, rest room with two beds, doctor's office, two examining rooms, a laboratory, an x-ray unit, and darkroom. The Department is divided into two parts; the first providing the finest emergency medical care for occupants of the building; the second performing preplacement and periodic medical examinations for employees."

Dental Accidents

TOOTHACHES and injuries to teeth and jaws from occupational hazards are costing industry $12,240,000 annually through millions of man-days lost, according to recent study. The construction business and leather tanning and metal turning trades showed the highest dental accident rate.

—*The Weekly Underwriter*, 2:7, 1953; in *Management Review*, September, 1953.

GM Saves Eyes

SINCE 1947 every employee and every visitor at the Oldsmobile plant of General Motors Corporation has worn safety glasses at all times in all areas. During the past five years only two serious eye injuries have occurred, in both cases when the employees had violated instructions and removed their goggles. Eighty-six employees escaped serious eye injury during this period due to the protection worn.

—*Sight-Saving Rev.*, 23:3 (Fall) 1953.

Won't Learn

JOHN V. GRIMALDI, Industrial Safety Director of the Association of Casualty and Surety Companies, recently said, "People in general and employees in particular have no more regard for the principles of accident prevention today than did the industrial worker at the dawn of the safety movement 40 years ago."

—*Office Executive*, September, 1953.

Blood Not Deductible

ALTHOUGH some taxpayers may violently disagree, blood is not the equivalent of money, at least, not when it is donated. The Bureau says that blood donated by an individual to a charitable institution for a transfusion, or to a blood bank, is not property and the fair market value of the blood is not deductible as a charitable contribution.

—*Rev. Rul.* 162.

OUR 57th YEAR

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Founders of the counseling service to the medical profession, serving medicine with distinction over half a century.

POSITIONS WANTED

Medical Director: (193) Capable surgeon; six years, private industrial practice; four years, Assistant Medical Director, important company; ready to assume responsibility as Medical Director in industry.

Medical Director: (194) Graduate, leading eastern medical school; past seven years, Assistant Medical Director, major company, petro-chemical industry; well-seasoned by training and experience for industrial Directorship; middle thirties.

Medical Director: (195) Diplomate, Internal Medicine; FACP; past seven years, Medical Director, leading company, 22,000 employees; early forties.

Medical Director: (196) Well-trained and experienced, industrial toxicology; well-qualified surgeon; several years, consultant, industrial medicine; past six years, Medical Director, large important company; middle thirties.

Medical Director: (197) Degrees from leading Eastern universities; well-qualified in industrial surgery; active in industrial medical affairs; past seven years, Medical Director, major company; 10,000 employees.

Medical Director: (198) Graduate, Class "A" school; well-experienced all phases large industrial medical operations; past seven years, Medical Director, important company with plants in U.S.A. and foreign countries; late thirties.

Staff Physician: (199) Graduate leading eastern school; several years, surgical internship, teaching hospital; two years, USAMC; past year, successful private general practice; prefers industrial appointment; age, 32.

Industrial Nurse: (200) 36; Trained outstanding eastern school; single; several years, staff nurse, USA Nurses Corps; past five years, head nurse, large industrial food refining plant.

POSITIONS OPEN

Medical Director: (54) New post; major company; 35,000 employees; requires young outstanding man who has achieved success in industrial medicine both clinical and administratively; East.

Medical Director: (55) Under 40 who, as Assistant Medical Director of reasonably large industrial company now seeks "top level" directorship; new post; seven plants, 22,000 employees; must be able to organize good medical department each plant; $20-$25,000; East.

Medical Director: (56) Fairly large plant; one of important company; large city, university medical center; East.

Medical Director: (57) To establish and head program in large company; new post; South.

Medical Director: (58) regional plant, major company; 4000 employees; Midwest.

Medical Director: (59) Familiar with toxicological problems; plant 1800 employees; will also develop medical program for executives in New York headquarters office.

Staff Physician: (60) Preferably with formal training in industrial medicine and Public Health; Assistant Medical Director; important company; 6,000 employees; large university city; $10-12,000; East.

Staff Physician: (61) Steel company; may also develop own practice; will be on staff of excellent hospital; fine town 25,000; East.

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PD-32

Back to the States

THE Manion Commission on Federal-state relations expects to make its first report to Congress by next March 1 on Federal functions, including health and medicine, that should be given back to states and communities. It authorized its chairman, former Notre Dame Law School Dean Clarence Manion, to select a small staff and report back in 30 days, and agreed to set up research subcommittees on various fields to be studied during the next few months. It has found quarters in the Department of Health, Education, and Welfare.

Slower, More Accurate

RESULTS of laboratory experiments have led industrial psychologists to make the following generalizations, among others: Older persons are slower than younger ones at organizing incoming data and acting upon it in terms of new tasks. Older persons tend to stress accuracy rather than speed. Older persons work more happily, and perhaps more efficiently, in small rather than large groups.

—PHILIP SHAY, in *Management News*, June, 1953, quoted in Connecticut General's *Notes and Quotes*, September, 1953.

New Field for Gangsters

GANGSTERS mulcted funds from unions at Yonkers Raceway, Dewey charged. The preliminary probe at the harness track, said the New York governor, appeared to have uncovered a "new lush field" for gangsters and rack-

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Vainder, Milton:
Indus. Med. & Surg.
22:183 (Apr.) 1953

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eteers—union health and welfare funds. The governor said large profits made by slain labor boss Thomas Lewis out of his union's funds indicates this "field for gangster-exploitation" is being developed and may require drastic government action. Lewis has been union kingpin at the track. Lewis' murder last month set off an investigation of the track's labor practices and resulted in the temporary suspension of the raceway's license.

—*Wall Street Journal*, September 24, 1953.

Allergy

SHAMBAUGH the younger mentions a simple angle on allergy. The tissues most susceptible to allergic diseases are those through which pathogenic microorganisms must pass to enter the body, namely the skin, the respiratory mucosa, and the gastrointentinal mucosa. . . . Certain people with an inherited tendency develop antibodies in those tissues for harmless food or inhalants. They react by union of antigen and antibody when they inhale or eat the items with typical changes in the body. . . . He stresses the point that deafness may be one of the numerous sequellae of this sequence.

—GUILLERMO OSLER, M.D., in *Arizona Med.*, September, 1953.

Risks

IN ADDITION to his own boners, the job-seeking executive must be prepared to endure those the employer may commit. There is the risk of psychological tests, for instance: A good executive may be rejected merely because an industrial psychologist has

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in common infections

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glibly interpreted his behavior. Even if a candidate gets by the psychologists, he runs the risk of failing the final test, which is applied by the employer's prejudices and whims. One company went so far as to reject a candidate because "his teeth were too square." Indeed, a candidate's record is not often the deciding factor. One placement man estimates that employers' judgments are based 20% on the record and 80% on personality.

—From "How Executives Get Jobs," by PERRIN STRYKER, *Fortune*, August, 1953; quoted in *Management Review*, August, 1953.

Occupational Accidents

OCCUPATIONAL accidents in 1952 cost American industry $45 per worker. Fifteen thousand persons were killed and two million injured while at work last year, and total time lost as a result of occupational injuries added up to 250 million man-days.

—National Safety Council; in *Management Review*, September, 1953.

Medical Schools

OF THE nation's 79 medical schools, 73 are four-year schools awarding MD degrees; six are medical basic science schools awarding no degree. All but nine are attached to universities. Forty-one are privately supported, and three are municipally supported. They are located in 56 cities in 37 states and the District of Columbia. Eleven states have no medical school.

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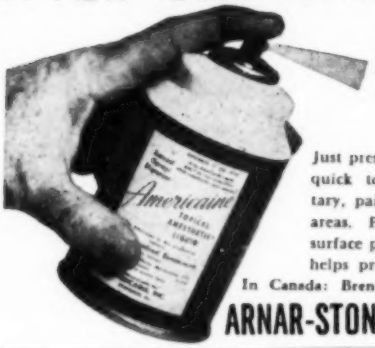

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Student bodies in the four-year schools range from 181 to 713; in the two-year schools from 48 to 118. Six percent of the students are women.

—*The Medical Advance*, 1:10 (October) 1953.

Frankford Arsenal

THE industrial medical program of Frankford Arsenal includes the Snellen and extreme near vision to blurring tests for visual acuity, ophthalmoscopic examination, and the issue of prescription goggles. In a recent article in *Military Surgeon* it is stated that, in 29.2% of the employees examined, uncorrected refractive errors or needs for changing glasses were found. Ocular diseases including glaucoma, optic atrophy, thrombus of the central retinal vein, choroiditis, incipient cataract, and keratoconus were present in 8%. Of these, only 11% were aware of their condition. Extra-ocular muscle difficulties were present in 18% of the employees, and 1.26% were color blind. The correction of vision in the small arms and instrument manufacture departments has resulted in less fatigue and more and better work. The early treatment of diabetes lessens the possibility of complications such as cataract.

—*Sight-Saving Rev.*, 23:3 (Fall) 1953.

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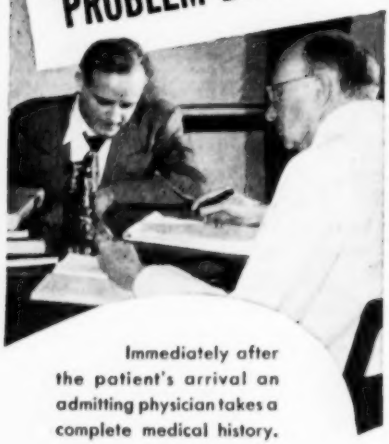

Immediately after the patient's arrival an admitting physician takes a complete medical history.

Treatment of the alcoholic is more than a sobering-up process; it is a rehabilitative procedure tailored to the needs of the individual.

The physicians at The Keeley Institute have had many years' experience in treating this class of patient and are specialists in their chosen field.

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Subsequently, following a thorough physical examination and indicated laboratory studies, a detailed course of management can be outlined. It should be emphasized that no patient is continued under treatment unless he recognizes his problem and cooperates with the staff physicians.

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Materials Handling

MATERIALS handling operations are the leading source of industrial injuries, accounting for about 40% of all plant accidents, according to one estimate. One-fourth of all compensated injuries, and one-fifth of all compensated permanent disabilities are caused by materials handling accidents. While the cost of injuries makes up a considerable part of materials handling costs, the losses in downtime, repairs, and the like can exceed the costs piled up by the injury cases. These costs may be hidden, but they are no less real in their impact on over-all plant efficiency and economy. To reduce these costs effectively requires an accident-prevention program that takes into consideration the safety of the equipment itself, the safety of the operators using the equipment, and the safety of other personnel who may come into contact with it. In addition, the careful consideration of space requirements for the efficient utilization of materials handling equipment is of prime importance.

—GEORGE W. HARPER, in *Safety Maintenance & Production*, September, 1953.

Doctors' Paradise

ACCORDING to the *American Journal of Sociology*, the chief function of the physician in Soviet Russia is to act as a preventive, maintenance and repair engineer so as to keep production up by keeping the producers on the job. Workers have to be in pretty bad shape before the doctors will give them "sick slips" for tardiness or absence, for which they are subject to heavy fines. The factor of malingering is dealt with meticulously. Then the doctors themselves are policed by government agents masquerading as patients; they endeavor to trap the doctors into illegal action. Yet the "party" always stands ready to penalize the doctor if he resists pressure to issue "sick slips" when they may perhaps be unwarranted. The whole system is geared to the totalitarian machinery of the communist state.

—*Medical Times*, August, 1953.

The Average Worker

HOW FAR does the average man reach? How fast can he read without error? How wide is his range of vision? These are only a few of the human engineering questions that industry will be asking as the trend toward automatic factories continues. "We can build instruments which are accurate to a tenth of a degree. But checks indicate that control people in a plant sometimes make errors of as much as 5% in reading a gauge," says JOHN G. FLEMING, research engineer for the Bristol Company, Waterbury, Connecticut. "One human mistake in an automatic factory could put the plant out of commission." Here are some things research has found out about the average

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pH-6 is a specially formulated, sulfonated oil, bland skin cleanser . . . amazingly effective in removing oils, greases, and other industrial grime. Lotion-like effect actually protects the skin . . . leaving it clean, smooth, and supple.

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industrial worker: He is five feet nine; his range of vision can cover a board 4 feet 10 inches in diameter when he is standing 18 inches from it; and he has a reach of 32 inches.

—*Wall Street Journal.*

Minneapolis Conference

THE Upper Midwest Industrial Health Conference was held at the Hotel Nicollet, Minneapolis, October 2, under the sponsorship of the Minnesota State Medical Association, Minneapolis Chamber of Commerce, and CENTRAL STATES SOCIETY OF INDUSTRIAL MEDICINE AND SURGERY in cooperation with the Hennepin County Medical Society, Minnesota Academy of Occupational Medicine, and Minnesota Industrial Nurses Association. In the morning DR. ORWOOD J. CAMPBELL, Minneapolis, served as Moderator for a penal discussion entitled "Health Service in Industry," and DR. JAMES R. FOX, Minneapolis, moderated a panel discussion entitled "The Role of Psychology in Industry." The following presentations were made during the afternoon session: "Injuries of the Hand," ALBERT T. HAYS, Minneapolis; "Dermatology in Industry," MR. ROBERT W. PLUNKETT; "Eye Injuries," MALCOM A. McCANNEL, Minneapolis. DR. LEONARD A. SCHEELE, Washington, D.C., Surgeon General, U.S. Public Health Service, was the guest speaker at the dinner and evening session.

Company-Made Dirt

PERSONNEL department handles community relations in more than half of 200 companies surveyed on the question by the Bureau of National Affairs; public relations department is in charge in 20%. Activities in this area, P.E.N. staff finds, show wide variety. Most common, probably, are company "open house" events, work with schools on vocational opportunities, gifts to local charities, and participation by company or its executives in local organizations. Some more unusual efforts: American Enka Corporation used its pumps to supply water for Asheville, North Carolina, during a shortage; was credited by the city engineer with relieving necessity for rationing. The Formica Company, in Cincinnati, built a shelter at a street car stop where passengers formerly had to stand in the rain. Field is difficult to hoe,

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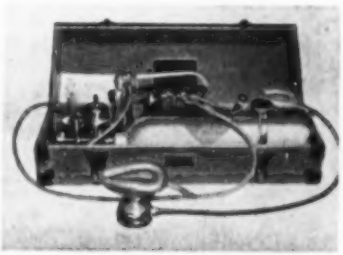

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however, for companies which, by the very nature of their business, make dust and dirt. One such had to pay for refinishing several hundred cars because dust—allegedly from its plants—had settled on a parking lot. Irate housewives who appear with dustpans full of company-made dirt are occupational hazards for executives in some industries.

—*Personnel Executives' Newsletter* (Deutsch & Shea), September 15, 1953.

Examinations in Industry

THE scope of the pre-employment examination is being gradually widened. For many years, several of the larger mines in Arizona have screened applicants for employment by chest roentgenograms, and repeated this periodically. At present, one of the railway systems in the state secures a pre-employment record of conditions in the lumbar spine by a roentgenographic record. MCGEE, of Wilmington, Delaware, writes on the subject of "Periodic Health Examinations in Industry" in the *Delaware State Medical Journal*, January, 1953. He discusses the type of physical examination, the use of clinical laboratory and x-ray procedures, and the interview between employee and examining physician, after the examination. While he discusses chiefly the periodic health examination during the course of employment, his remarks are pertinent to the pre-employment examination as well.

—*Arizona Med.*, August, 1953.

DOME PREVENTIVE THERAPY MANS THE GUNS AGAINST DERMATITIS AND RELATED OCCUPATIONAL DERMATOSES . . .
DERMATITIS
THEY SHALL NOT PASS
INDUSTRY
★REDUCE ABSENTEEISM
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You can now prevent contact Dermatitis by preserving the Acid Mantle of the skin . . . with . . . . .
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The HOUSE OF DOME, exclusively serving the field of dermatology, is proud to present for the approval of industrial medicine its widely-heralded new ACID MANTLE CREME. The regular use of this new DOME development after washing, wet-work or any exposure to primary irritants quickly restores the normal acidity to the skin. ACID MANTLE CREME itself possesses a pH of 4-2 combining the benefits of acidifying action with the healing and soothing properties of a buffered solution of aluminum acetate.
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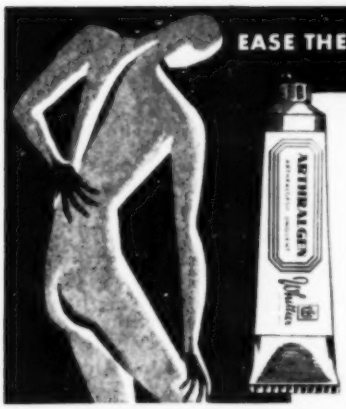
Trudeau-Saranac

THE board of trustees of Trudeau Sanatorium, Trudeau, New York, recently voted to merge the activities of the Trudeau Sanatorium (the parent corporate body), the Edward L. Trudeau Foundation (a fund established to assist in carrying out the research program of the entire Trudeau organization), and the Saranac Laboratory (one of the research laboratories of the Trudeau organization, which will continue to function under that name), under one administrative organization, with DR. GORDON M. MEADE, formerly Medical Director of Trudeau Sanatorium, as Executive Director. This change was made in the interest of uniformity of objectives and increased efficiency of operation. Word of the reorganization has led to erroneous reports that the work of the Saranac Laboratory and other Trudeau laboratories in the field of pulmonary diseases of industrial origin would be discontinued. The board of trustees states that it not only intends to continue research and teaching in the fields of tuberculosis and pulmonary diseases of industrial origin but hopes also to expand the work in the latter field. Pending appointment of a successor to DR. ARTHUR J. VORWALD, Director of the Saranac Laboratory who resigned July 1, work of the Laboratory continues under the supervision of DR. PHILIP C. PRATT. A pamphlet, entitled



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"Answers to Questions from Physicians about Trudeau Sanatorium," was recently prepared to bring physicians up-to-date on the Sanatorium, which will celebrate its 70th anniversary next year. Copies of the pamphlet may be had on request to DR. ROGER S. MITCHELL, Clinical Director, Trudeau Santorium, Trudeau, New York. —*J.A.M.A.*, October 3, 1953.

Accident and Health Coverage

THE American people during 1952 voluntarily increased their protection against the unexpected cost of hospital, surgical and medical care to the highest point in the country's history, according to the Annual Survey, 1953, of the Health Insurance Council, 488 Madison Avenue, New York 22. Now some 91.5 million people have some form of hospital expense protection, more than 73 million have surgical protection, and nearly 36 million have some form of medical expense coverage. Protection against the loss of income due to disability is owned by 38 million people, which is estimated to be three out of five members of the civilian labor force. Included in this Sixth Anual Survey is some statistical information on major medical expense coverage which now protects nearly 700,000 people. The Survey also includes for the first time estimates of benefit payments under voluntary plans. The Survey material embraces plans of insurance companies, Blue Cross and Blue Shield.

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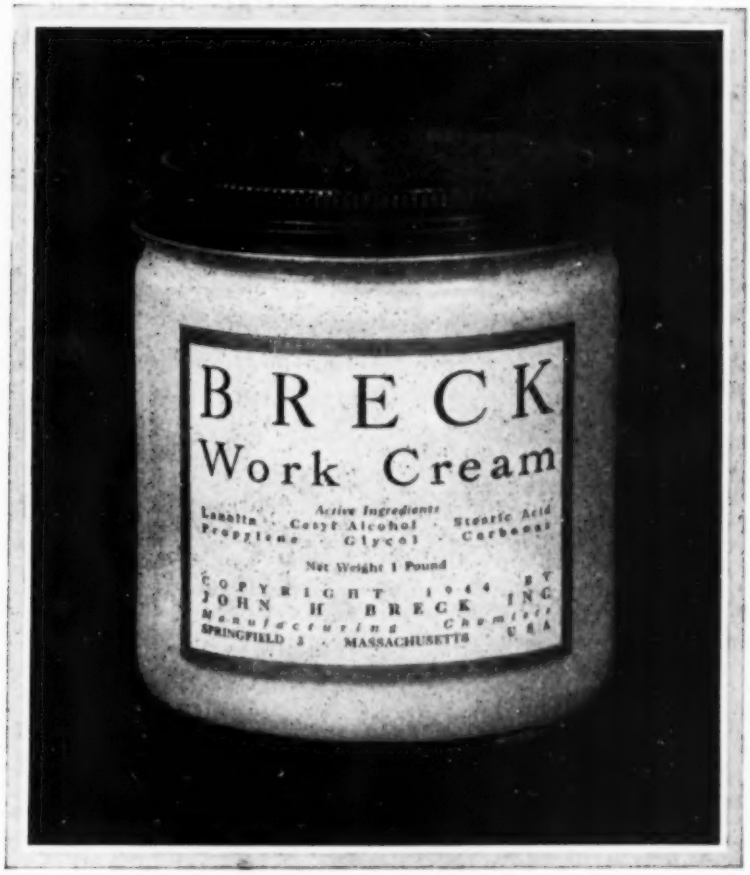

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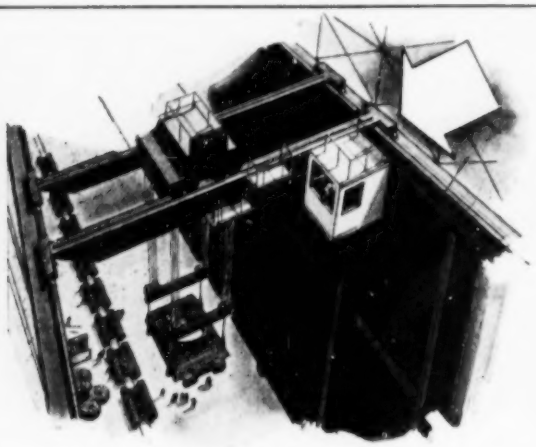

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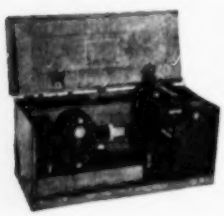

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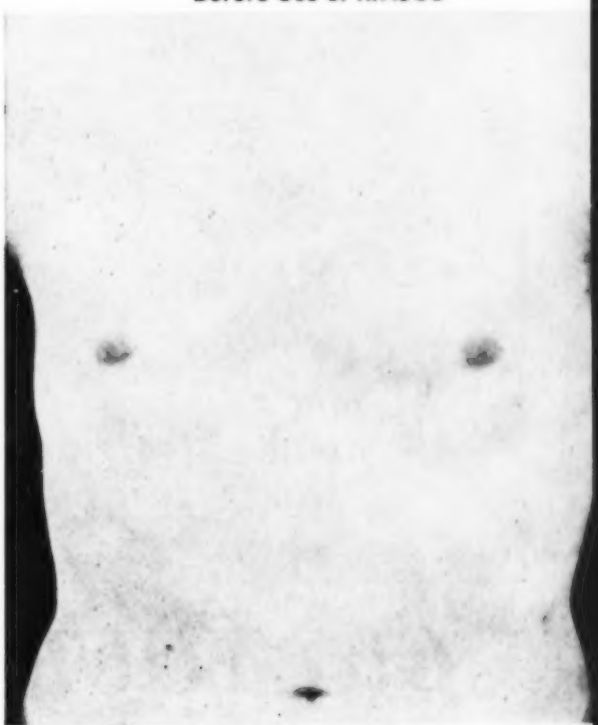

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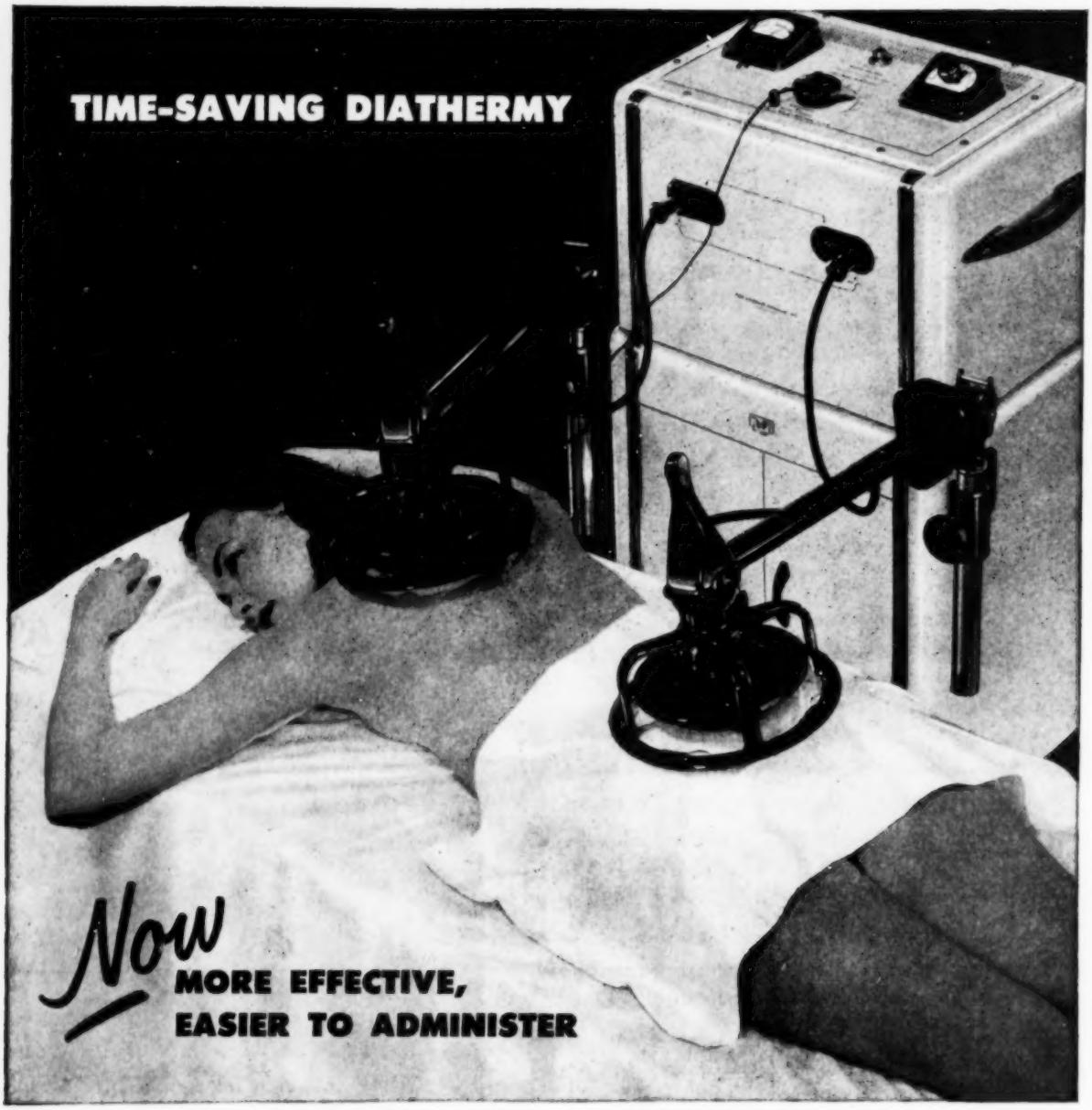

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1. Gastric Tolerance for Aspirin and Buffered Aspirin. Ind. Med. 20:480, Oct. 1951.
2. Effect of Buffering Agents on Absorption of Acetylsalicylic Acid. J. Am. Pharm. Assoc., Sc. Ed. 39:21, Jan. 1950.

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